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A revista Millenium chega ao final do primeiro ano da série 2, com este número 4. Setembro de 2017 assinala o esforço de uma nova política editorial que se traduziu na publicação de quatro números com artigos simultaneamente em português e inglês, cuja qualidade científica foi rigorosamente atestada por *blind peer revue* e cujos autores são externos ao IPV. Foram ainda publicados mais dois números em Edição Especial.

Este número mantém o objetivo de uma revista multidisciplinar e transdisciplinar de difusão do conhecimento científico e tecnológico partindo da premissa de que as diversas áreas científicas e a investigação cada vez mais se entrecruzam e se completam.

Na secção Engenharias, Tecnologia, Gestão e Turismo, o artigo *"Shopping intention prediction using decision trees"*, estuda o processo de tomada de decisão de compra e a forma como pode ser muito desafiador para o cliente tendo para isso criado um modelo para prever a intenção de compra e segmentar os clientes em uma das duas categorias, dependendo da intenção de comprar ou não. Por último, em *"Internal versus external service quality: reflections of employees and customers in the mirror"* investiga-se a relação da perceção da qualidade do serviço interno pelos membros da faculdade com as perceções de qualidade dos alunos e conclui que estas estão positivamente relacionadas. A comparação dos níveis de qualidade de serviço interno e externo ajudará os gestores a definir prioridades para alocar recursos para melhorar a qualidade.

A secção Educação e Desenvolvimento Social, inicia-se com o artigo *"Student´s learning processes for sustainable knowledge"* que tem como objetivo identificar como os alunos estão a usar o *design* de uma unidade curricular para criar conhecimento sobre Desenvolvimento de Negócios Sustentáveis, pretendendo contribuir para o conhecimento sobre os processos de aprendizagem ao nível do ensino universitário. Conclui haver necessidade de introduzir processos de aprendizagem individual e coletivos e que a facilitação destes processos deverá ser uma tarefa para os agentes educativos. O segundo artigo desta secção *"Almadrava: Men and sea. Social relationship in a short-term community"*, com recurso à análise documental e entrevista pretende ser uma chamada de atenção para a preservação da memória coletiva de artes e modos de vida de uma aldeia piscatória do sul de Portugal.

A secção Ciências da Vida e da Saúde, integra quatro artigos, sendo o primeiro *"Ontology elements identified in different nursing classification systems*", que cumpre a finalidade de facilitar o desenvolvimento de ontologias para a prática de enfermagem baseada em terminologias de enfermagem, contribuindo, assim, para o desenvolvimento de políticas de saúde e pelo uso de ontologias em sistemas de informação. Segue-se o estudo *"Perception of quality of life of people with drug addiction"*, que avalia a perceção de Qualidade de Vida (QV) das pessoas com dependência de drogas, e identificar grupos com maior vulnerabilidade, com vista ao planeamento de programas de intervenção mais efetivos. O terceiro artigo "*Deaf people's satisfaction with the health care system quality"* documenta o nível de satisfação da pessoa surda com a qualidade das ações e serviços oferecidos nas unidades de saúde públicas brasileiras. Por último, o artigo *"Music therapy as an autonomous intervention of nurses for pain control in ICU: integrative review"*, conclui na sua revisão integrativa que a musicoterapia é uma intervenção autónoma de enfermagem, que pode ser utilizada como intervenção não farmacológica, no controlo da dor, em doentes com necessidades específicas inerentes a uma UCI.

Finaliza este número a secção Ciências Agrárias, Alimentares e Veterinárias com o artigo "*Education as a tool to reduce the water footprint of young people"* que analisa o papel da educação da população jovem e o seu papel na gestão sustentável da água e conclui que os jovens estão a consumir demasiada água, devendo rever hábitos na alimentação, no vestuário, e na duração dos duches diários.

A Equipa Editorial
Madalena Cunha, José Luís Abrantes, Maria João Amante, José Paulo Lousado, Paula Correia

Millenium journal reaches the end of the first year of series 2, with this number 4. September 2017 marks the effort of a new editorial policy that is translated into the publication of four numbers with articles simultaneously in Portuguese and English, whose scientific quality was rigorously attested by blind peer review and whose authors are external to the IPV. Two more issues were also published as Special Edition.

This issue maintains the objective of a multidisciplinary and transdisciplinary journal of diffusion of scientific and technological knowledge based on the premise that the different scientific areas and research increasingly cross and complete each other.

In the Engineering, Technology, Management and Tourism section, the article "*Shopping intention prediction using decision trees*" examines the purchasing decision making process and how it can be very challenging for the client. For that, it was created a two categories model to prevent the purchase intent and to segment customers, depending on the intent to buy it or not. Finally, in "*Internal vs. external service quality: reflections of employees and customers in the mirror*" it is investigated the relation of the perception of the quality of the internal service by the members of the faculty, with the perceptions of quality of the students and it was concluded that these were positively related.

The section "Education and Social Development" begins with the article "*Student's learning processes for sustainable knowledge*" which aims to identify how students are using the design of a curricular unit to create knowledge about Sustainable Business Development, intending to contribute for the knowledge about the learning processes at university level. It concludes that there is a need to introduce individual and collective learning processes and that the facilitation of these processes should be a task for educational agents. The second article in this section "*Almadrava: Men and sea. Social relationship in a short-term community*", using documentary analysis and interviews, aims to be a wakeup call for the preservation of the collective memory of arts and the ways of life of a fishing village in the south of Portugal. Comparing internal and external quality of service levels will help managers set priorities for allocating resources to improve quality.

The Health and Life Sciences section integrates four articles, the first being "*Ontology elements identified in different nursing classification systems*", which aims to facilitate the development of ontologies for nursing practice based on nursing terminologies, contributing, this way, to the development of health policies and the use of ontologies in information systems.

The study "*Perception of quality of life of people with drug addiction*", which assesses the perception of Quality of Life (QL) of people related to drug addiction, and which aims to identify groups with greater vulnerability, with a view to planning interventions. The third article "*Deaf people's satisfaction with the health care system quality*" documents the level of satisfaction of the deaf person concerning the quality of the actions and services offered in the Brazilian public health units. Finally, the article "*Music therapy as an autonomous intervention of nurses for pain control in ICU: integrative review*" concludes, in its integrative review, that music therapy is an autonomous nursing intervention that can be used as non-pharmacological intervention in the control of pain, in patients with specific needs inherent to an ICU.

This number ends with the section Agrarian, Food and Veterinary Sciences, with the article "*Education as a tool to reduce the water footprint of young people*". This article analyzes the role of youth education and its role in sustainable water management and concludes that young people are consuming too much water, and should review their habits related to food, clothing, and the duration of daily showers.

The Editorial Board
Madalena Cunha, José Luís Abrantes, Maria João Amante, José Paulo Lousado, Paula Correia

La revista Millenium llega al final del primer año de la serie 2, con este número 4. Septiembre de 2017 señala el esfuerzo de una nueva política editorial que se tradujo en la publicación de cuatro números con artículos escritos simultáneamente en portugués e inglés, cuya cualidad científica fue rigurosamente corroborada por una *revisión por pares ciegos* y cuyos autores son externos al IPV. Además se publicaron dos números adicionales en Edición Especial.

Este número mantiene el objetivo de una revista multidisciplinar y transdisciplinar de difusión del conocimiento científico y tecnológico partiendo de la premisa de que las diversas áreas científicas y la investigación se entrecruzan y complementan cada vez más.

En la sección de Ingenierías, Tecnología, Gestión y Turismo, el artículo *"Shopping intention prediction using decision trees"*, estudia el proceso de toma de decisiones de compra y la forma en cómo está puede ser muy desafiante para el cliente, habiéndose creado un modelo para prever la intención de compra y segmentar los clientes en una de las dos categorías, dependiendo de su intención de comprar o no. Por último, en *"Internal versus external service quality: reflections of employees and customers in the mirror"* se investiga la relación entre la percepción de la calidad del servicio interno por los miembros de la facultad y la percepción de la calidad por parte de los alumnos y concluye que están positivamente relacionadas. La comparación de los niveles de calidad del servicio interno y externo ayudará a los gestores a definir las prioridades en la asignación de recursos para mejorar la calidad.

La sección de Educación y Desarrollo Social, se inicia con el artículo *"Student´s learning processes for sustainable knowledge"* que tiene como objetivo identificar como los alumnos están usando el diseño de una unidad curricular para crear conocimientos sobre Desarrollo de Negocios Sostenibles, pretendiendo contribuir al conocimiento sobre los procesos de aprendizaje a nivel de la enseñanza universitaria. Concluye que hay necesidad de introducir procesos de aprendizaje individuales y colectivos y que facilitar estos procesos debe ser una tarea de los agentes educativos. El segundo artículo de esta sección *"Almadrava: Men and sea. Social relationship in a short-term community"*, recurriendo al análisis documental y a la entrevista, pretende ser una llamada de atención para preservar la memoria colectiva de artes y modos de vida de una aldea pesquera del sur de Portugal.

La sección Ciencias de la Vida y de la Salud está integrada por cuatro artículos, siendo el primero *"Ontology elements identified in different nursing classification systems"* que cumple la finalidad de facilitar el desarrollo de ontologías para la práctica de la enfermería basada en terminología de enfermería, contribuyendo de esta manera para el desarrollo de políticas de salud y para el uso de ontologías en sistemas de información. A continuación está el estudio *"Perception of quality of life of people with drug addiction"*, que evalúa la percepción de calidad de vida (QV) de las personas con drogodependencia e identifica los grupos con mayor vulnerabilidad, con vistas a la planificaciºon de programas de intervención más efectivos. El tercer artículo "*Deaf people's satisfaction with the health care system quality"* documenta el nivel de satisfacción de personas sordas con la calidad de las acciones y servicios ofrecidos en las unidades de salud pública brasileñas. Por último, el artículo *"Music therapy as an autonomous intervention of nurses for pain control in ICU: integrative review"*, concluye en su revisión integrativa que la musicoterapia es una intervención autónoma de enfermería, que puede utilizarse como intervención no farmacológica, en el control del dolor, en pacientes con necesidades específicas inherentes a una UCI.

Finaliza este número la sección de Ciencias Agrarias, Alimentación y Veterinaria con el artículo "*Education as a tool to reduce the water footprint of young people"* que analiza el papel de la educación de la población joven y su papel en la gestión sostenible del agua y concluye que los jóvenes están consumiendo demasiada agua, teniendo que revisar sus hábitos de alimentación, en el vestuario y en la duración de sus duchas diarias.

El Equipo Editorial
Madalena Cunha, José Luís Abrantes, Maria João Amante, José Paulo Lousado, Paula Correia

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PREVISÃO DE INTENÇÃO DE COMPRA UTILIZANDO ÁRVORES DE DECISÃO

SHOPPING INTENTION PREDICTION USING DECISION TREES

PREDICCIÓN DE LA INTENCION DE COMPRAS USANDO ÁRBOLES DE DECISIÓN

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RESUMO

Introdução: O preço é um elemento negligenciado na literatura em marketing devido à complexidade da sua gestão e sensibilidade dos clientes sobre as mudanças de preços. Consequentemente, o processo de tomada de decisões de compra pode ser muito desafiador para o cliente.
Objetivo: Criar um modelo para prever a intenção de compra e segmentar os clientes em uma das duas categorias, dependendo da intenção de comprar ou não.
Métodos: A amostra é composta por 305 entrevistados, pessoas com idade superior a 18 anos envolvidas na compra de mantimentos para sua casa. A pesquisa foi realizada em fevereiro de 2017. Para criar um modelo, o método decision trees foi usado com os seus vários algoritmos de classificação.
Resultados: Todos os modelos, exceto onde foi usado o algoritmo RandomTree, alcançaram uma taxa de classificação relativamente alta (acima dos 80%). A classificação com maior precisão foi de 84,75% com algoritmos J48 e RandomForest. Como não há diferença estatisticamente significativa entre esses dois algoritmos, os autores decidiram escolher o algoritmo J48 e criar uma árvore de decisão.
Conclusões: O valor monetário e o nível de preços na loja foram as variáveis mais significativas para a classificação da intenção de compra. No futuro pretende-se comparar esse modelo com algumas outras técnicas de data mining, como redes neurais ou support vector machines, uma vez que essas técnicas alcançaram uma precisão elevada em estudos anteriores neste campo.
Palavras-chaves: Modelo; Compra, Árvore de decisão.

ABSTRACT

Introduction: The price is considered to be neglected marketing mix element due to the complexity of price management and sensitivity of customers on price changes. It pulls the fastest customer reactions to that change. Accordingly, the process of making shopping decisions can be very challenging for customer.
Objective: The aim of this paper is to create a model that is able to predict shopping intention and classify respondents into one of the two categories, depending on whether they intend to shop or not.
Methods: Data sample consists of 305 respondents, who are persons older than 18 years involved in buying groceries for their household. The research was conducted in February 2017. In order to create a model, the decision trees method was used with its several classification algorithms.
Results: All models, except the one that used RandomTree algorithm, achieved relatively high classification rate (over the 80%). The highest classification accuracy of 84.75% gave J48 and RandomForest algorithms. Since there is no statistically significant difference between those two algorithms, authors decided to choose J48 algorithm and build a decision tree.
Conclusions: The value for money and price level in the store were the most significant variables for classification of shopping intention. Future study plans to compare this model with some other data mining techniques, such as neural networks or support vector machines since these techniques achieved very good accuracy in some previous research in this field.
Keywords: Shopping intention; Price image; Retailer's image; Classification algorithms; Machine learning.

RESUMEN

Introducción: El precio se considera un elemento descuidado del marketing-mix debido a la complejidad de la gestión de precios y la sensibilidad de los clientes en los cambios de precios. Esto lleva a reacciones más rápidas de los clientes a ese cambio. En consecuencia, el proceso de toma decisiones de compra puede ser muy desafiante para el cliente.
Objetivo: Crear un modelo capaz de predecir la intención de la compra y clasificar a los encuestados en una de las dos categorías, dependiendo de si pretenden comprar o no.
Métodos: La muestra de datos consta de 305 encuestados, que son personas mayores de 18 años involucrados en la compra de productos de alimentación para su hogar. La investigación se realizó en febrero de 2017. Con el fin de crear un modelo, se utilizó el método de árboles de decisión con sus diversos algoritmos de clasificación.
Resultados: Todos los modelos, excepto el que utilizó el algoritmo RandomTree, lograron una tasa de clasificación relativamente alta (más del 80%). La precisión de clasificación más alta del 84,75% se dio con los algoritmos J48 y RandomForest. Dado que no hay diferencia estadísticamente significativa entre los dos algoritmos, los autores decidieron elegir el algoritmo J48 y construir un árbol de decisión.
Conclusiones: El valor del dinero y el nivel de precios en la tienda fueron las variables más significativas para la clasificación de la intención de compra. Planes futuros de estudio para comparar este modelo con algunas otras técnicas de *data mining*, tales como redes neuronales o máquinas vectoriales de apoyo, ya que estas técnicas lograron muy buena precisión en algunas investigaciones previas en este campo.
Palabras Clave: Modelo; Compra, Árbol de decisión.

INTRODUCTION

The price is considered to be neglected marketing mix element due to the complexity of price management and sensitivity of customers on price changes. As the fastest changeable element, it pulls the fastest customer reactions to that change. Accordingly, the process of making shopping decisions can be very challenging for customer. In order to facilitate customer's shopping intention, every retailer strives to achieve better price image, which represents the totality of all prices in the retailer's assortment. Zielke (2006) showed the multidimensionality of price images and presented five image dimensions: price-level perception, value for money, price perceptibility, price processing, and evaluation certainty. According to him, retailers have to set priorities to the most important dimensions.

The aim of this paper is to create a model that is able to predict shopping intention and classify respondents into one of the two categories, depending on whether they intend to shop or not. Also, the meaningful variables that affect customers' shopping intention will be presented. In order to create a model, the decision trees method was used with its several classification algorithms.

This paper is structured as follows: Section 2 gives an overview of previous research in this field, in Section 3 methodology and data are described and Section 4 consists of research results. Conclusion and guidelines for future research are given in Section 5.

1. THEORETICAL FRAMEWORK

There are no lot of papers that deal with predictions of "in-store" shopping intention using data mining techniques. Several authors were predicting online shopping intention. For example, Crone and Soopramanien (2005) evaluated the predictive accuracy of consumer online shopping behaviour using logistic regression and neural networks. Average classification rate for logistic regression was 54.4%, while neural networks achieved accuracy of 57%. Yulihasri et al. (2011) were investigating the factors affecting student's buying intention through internet shopping. They conducted a multiple regression and concluded that usefulness, ease to use, compatibility and security have a significant impact to attitude for shopping online. Zuo and Yada (2014) presented a research about the prediction of purchase behaviour based on RFID data and using Bayesian network to demonstrate a quantitative analysis process of purchase behaviour decision over stay time. The results showed that Bayesian network has a better accuracy than other typical prediction models. Vieira (2015) compared traditional machine learning techniques to propose a classifier to predict buying intention based on user behaviour within an e-commerce website. Prediction model of consumers' purchase intention based on mobile search behaviours was introduced by Zhang et al. (2015). They developed a probabilistic generative model to identify search patterns and validated that model on the dataset released by Alibaba. Shi and Ghedira (2016) proposed a prediction model in order to predict customer's online shopping intention. They used unsupervised (clustering) and supervised learning techniques (classification). For a classification, four algorithms were used: linear discriminant analysis, support vector machines, decision trees C5.0 and naive Bayes. Decision trees model (C5.0 algorithm) had accuracy of 90%. Suchacka and Stemplewski (2017) proposed a neural network model in order to predict purchases in active user sessions in a Web store. The neural network had very high accuracy of 99.6%. Zielke (2010) analysed the direct and indirect effects of price-image dimensions on shopping intentions. The results showed that significant positive direct effects exist for Value for money, Price-level image and Evaluation certainty. Franjković (2017) was researching the impact of the price-image dimensions on shopping intention using regression analysis. She concluded that dimensions Price level, Value for money and Price perceptibility have a statistically significant impact on shopping intention and that price-image dimension Value for money have the strongest impact.

2. METHODS

In this section, methodology and data used for creating a model will be described.

2.1 Decision trees

Decision tree is a data mining technique for solving classification and prediction problems. Data mining consists of different methods and algorithms used for discovering the knowledge from large data sets. Figure 1 shows the taxonomy of data mining methods. Decision trees are used for solving classification, as well as regression problems. When a decision tree is used for classification tasks, it is most commonly referred to as a classification tree, and when it is used for regression tasks, it is called a regression tree. Speaking of the classification problems, the learning scheme is presented with a set of classified examples (training set) from which it is expected to learn a way of classifying unseen examples (testing set). Decision tree has a simple hierarchical structure easy to understand, consisted of nodes and leaves. Each node in the tree involves testing a particular attribute and each leaf of the tree denotes a class. Decision tree classifies instances by sorting them down the tree from the root to some leaf node, which gives a classification that applies to all instances that reach the leaf. The tree complexity is measured by one of the following metrics: the total number of nodes, total number of leaves, tree depth and number of attributes used (Quinlan, 1987; Mitchell, 1997; Witten et al., 2011; Hssina et al., 2014; Rokach and Maimon, 2014).

Decision trees are a recursive structure. It means that it is necessary to select an attribute to place at the root node, and then make one branch for each possible value. This splits up the example set into subsets, one for every value of the attribute. That process can be repeated recursively for each branch, but using only those instances that reach the branch. When instances at a node have the same classification, that part of the tree stops developing (Witten et al., 2011). Decision trees have a several algorithms used for creating a tree, and the way finding the attribute that produces the best split in the data is the one of the main differences between them (Vandamme et al., 2007). Several measures are used for defining a splitting criterion. Each decision tree algorithm uses its own measure to select among the attributes at each step while growing the tree.

For creating decision trees, authors used Weka system (version 3.8.0) for training and testing datasets using a variety of machine learning algorithms. The Weka workbench is a collection of state-of-the-art machine learning algorithms and data pre-processing tools. It is developed at the University of Waikato in New Zealand. The workbench includes methods for the main data mining problems: regression, classification, clustering, association rule mining, and attribute selection (Witten et al., 2011).

In order to get the most accurate prediction model, several decision tree classification algorithms were used: J48, REPTree, RandomTree and RandomForest. Those algorithms are explained in detail below.

J4.8 algorithm is Weka's implementation of the famous C4.5 decision tree learner, proposed in 1992, by Ross Quinlan, which uses a divide-and-conquer approach to growing decision trees. The default splitting criterion used by C4.5 is gain ratio, an information-based measure that takes into account different number of test outcomes (Quinlan, 1996; Witten et al., 2011). In order to calculate the GainRatio, it is necessary to measure information gain and entropy. Entropy characterizes the (im)purity of an arbitrary collection of examples. If the target attribute can take on m different values, then the entropy of S relative to this m-wise classification is defined as (Mitchell, 1997):

$$Entropy(S) = -\sum_{i=1}^{m} p_i log_2 p_i \qquad (1)$$

where S is a given collection and pi is the proportion of S belonging to class i. Now it is possible to define an information gain, the measure of the effectiveness of an attribute in classifying the training data (Mitchell, 1997):

$$Gain(S, A) = Entropy(S) - \sum_{v \in Values(A)} \frac{|S_v|}{|S|} Entropy(S_v) \qquad (2)$$

where Values(A) is the set of all possible values for attribute A, and Sv is the subset of S for which attribute A has value v. Gain ratio, as mentioned before, is the default splitting criterion of C4.5 algorithm, defined as follows (Quinlan, 1996):

$$GainRatio(S, A) = \frac{Gain(S, A)}{Split\ Information(S, A)} \qquad (3)$$

REPTree (Reduced Error Pruning Tree) uses the regression tree logic and creates multiple trees in different iterations. After that it selects best one from all generated trees. That will be considered as the representative. In pruning the tree, the measure used is the mean square error on the predictions made by the tree. REPTree is a fast decision tree learner which builds a decision/regression tree using information gain as the splitting criterion, and prunes it using reduced error pruning. It only sorts values for numeric attributes once. Missing values are dealt with using C4.5's method of using fractional instances (Kalmegh, 2015).witt

RandomTree is an algorithm for constructing a tree that considers K random features at each node and performs no pruning (Witten et al., 2011, cited in: Ozer, 2008).

RandomForest is a combination of tree predictors such that each tree depends on the values of a random vector sampled independently and with the same distribution for all trees in the forest (Breiman, 2001). Unlike standard trees, where each node is split using the best split among all variables, in a random forest,

each node is split using the best among a subset of predictors randomly chosen at that node (Breiman, 2001, cited in: Liaw and Wiener, 2002).

2.2 Data

In order to collect data about shopping habits, a primary research using highly structured questionnaire was conducted. A population consisted of 171,103 households of two counties in eastern Croatia – Osječko-baranjska and Vukovarsko-srijemska. Target respondents were persons older than 18 years involved in buying groceries for their household (but they are not necessary primary buyers). The research was conducted in February 2017 and 313 questionnaires were collected. After the process of clean-up and elimination of useless and incomplete data the outcome sample consisted of 295 respondents.

The first part of the questionnaire included questions related to the importance of price in making shopping decisions, the perception of respondents' own knowledge about prices, the perception of the retailer's slogans and price-image. The second part of the questionnaire referred to the frequency of shopping at the certain retailer. Respondents were asked to choose one retailer where they most often buy and one where they rarest buy, but at least once in a few months, in order to find the main reasons why they buy at this particular retailer, what gives the most impression about the prices and to measure the price dimensions.

Initially, decision tree model used 29 input variables, but after conducted attribute selection process in Weka, 11 variables were marked as irrelevant for the model. Thus, the final model has 18 input variables as shown in Table 1.

More about the attribute selection process can be found in Section 4.1. Input variable 'Most_often' refers to retailer where respondents do the shopping most often. Variable 'Transport' shows transportation type by which respondents go to the store. The main reason of the shopping at the certain retailer where respondents most often buy is shown in the variable 'Main_reason_often'. There are several possible reasons: vicinity, actions and savings on special pricings (action), generally low prices (low_prices), assortment width and quality of the fruits and vegetables (assort_width_f&v), assortment width and quality of the other products (assort_width_other), the best offer of a specific product category (offer_categories) and some other reasons (other). Variable 'Impression_often' answers on the question "What leaves the biggest impression related to prices at this retailer where you most often buy?".

The possible answers are: large variety of products at different prices within the product category (product_variety), retailer in general and its price-image in comparison with the competition (retailer_general), generally prices in the store (prices_general) and prices of individual products (prices_indiv_prod). Variables 'Rarest', 'Main_reason_rarest' and 'Impression_rarest' have the same possible answers as the last three described variables, but these variables are related to the retailer where respondents rarest buy. Variable 'Price_info' refers to the type of informing about prices that respondents use most often. There are several groups of price informing types: informing by paper catalogues sent to the households (catalogue_paper), informing by online catalogues (catalogue_online), using mobile apps of retailers (mob_app), informing by TV ads (TV_ads), informing by webpages for price comparison (webpage_comparison), informing by talking with friends, family members and others (talk_friends) and nothing of the stated (nothing). The next variable 'Price_info_freq' shows how often respondents inform themselves about prices using some source of information. Possible answers were: everyday, several times a week (several_times_week), just before a big shopping (before_big_shopping), several times a month (several_times_month), once a month or less (<=1_month).

The last four variables are demographic ones: age of respondents, their employment and education status and number of children (no children, 1 child, 2 children, 3 children, 4 or more children and not answered).

There are five variables that represent price-image dimensions: 'Price-level', 'Value_for_money', 'Perceptibility', 'Evaluation_certainty' and 'Price_processing'. A model of measurement of the price-image dimensions, as well as shopping intention dimension, is taken from the research conducted by Zielke (2006). According to him, a "Price-level perception" is the perception of prices without taking quality differences into account, "Value for money" is the outcome of a trade-off between sacrifices and utilities derived from product and store attributes, "Price perceptibility" represents the ease with which a customer can find or see products' prices in the store, "Evaluation certainty" describes how easily customers perceive the price-evaluation process, while "Price procassibility" refers to the ease of price processing. Measuring scales were comprised of 3 to 5 items, depending on the dimension and measured by 5-point Likert scale. For price-image dimensions and shopping intention, a mean of all items is calculated, which represents a value of the variable.

Table 1 – Input variables used for modelling

No.	Variable	Description	Frequency/statistics
1	Most_often	Retailer where respondents do the shopping most often	Konzum (29.83%) Kaufland (20.00%) Lidl (15.93%) Plodine (14.58%) Interspar (9.49%) Billa (8.81%) Other (1.36%)
2	Transport	Transportation type by which respondents go to the store	Car (66.78%) Foot (26.10%) Bicycle (5.08%) Public_transport (2.03%)
3	Main_reason_often	The main reason of the shopping at this retailer	Vicinity (41.36%) Action (22.37%) Low_prices (11.86%) Assort_width_other (10.85%) Assort_width_f&v (8.47%) Other (3.05%) Offer_categories (2.03%)
4	Impression_often	The biggest impression related to prices at this retailer	Product_variety (36.95%) Retailer_general (22.37%) Prices_general (22.03%) Prices_indiv_prod (18.64%)
5	Price_level	Price dimension: Price level	Min: 1; Max: 5; Mean: 3.66; StdDev: 0.917
6	Value_for_money	Price dimension: Value for money	Min: 1; Max: 5; Mean: 3.797; StdDev: 0.85
7	Perceptibility	Price dimension: Perceptibility	Min: 1; Max: 5; Mean: 3.735; StdDev: 0.918
8	Evaluation_certainty	Price dimension: Evaluation certainty	Min: 1; Max: 5; Mean: 2.188; StdDev: 0.953
9	Price_processing	Price dimension: Price processing	Min: 1; Max: 5; Mean: 2.285; StdDev: 0.933
10	Price_info	The most often type of informing about prices	Catalogue_paper (79.32%) Catalogue_online (6.78%) TV_ads (4.07%) Nothing (3.05%) Talk_friend (2.71%) Mob_app(2.71%) Webpage_comparison (1.36%)
11	Price_info_freq	How often respondents inform themselves about prices	Several_times_week (35.93%) Before_big_shopping (23.73%) Several_times_month (19.32%) Everyday (10.51%) <=1_month (10.51%)
12	Rarest	Retailer where respondents do the shopping rarest	Billa (25.08%) Interspar (21.36%) Plodine (17.97%) Kaufland (15.25%) Konzum (9.83%) Lidl (8.47%) Other (2.03%)
13	Main_reason_rarest	The main reason of the shopping at this retailer	Action (37.29%) Vicinity (30.51%) Other (9.49%) Offer_categories (7.46%) Low_prices (6.44%) Assort_width_other (5.42%) Assort_width_f&v (3.39%)

No.	Variable	Description	Frequency/statistics
14	Impression_rarest	The biggest impression related to prices at this retailer	Prices_indiv_prod (36.61%) Retailer_general (25.76%) Prices_general (22.37%) Product_variety (15.25%)
15	Age	Age of respondent	50-59 (25.42%) 30-39 (25.08%) 40-49 (21.36%) 18-29 (17.29%); >=60 (10.85%)
16	Employment	Employment status of respondent	Employed (83.05%) Unemployed (7.80%) Retired (6.10%) Student (3.05%)
17	Education	Education status of respondent	Faculty (60.00%) Highschool (37.29%) Elementary (2.71%)
18	Child_no	Number of children of respondent	0_children (56.61%) 1_child (22.37%) 2_children (13.56%) 3_children (3.73%) NO (3.39%) 4_more (0.34%)

As the output variable (class variable), shopping intention of respondents was chosen. As mentioned above, a mean of all items of shopping intention was calculated and that given value refers to the respondent's shopping intention. Variable was expressed as nominal with two classes – NO (shopping intention < 4.0), for the respondents who do not have a shopping intention and YES (shopping intention >=4.0), for the respondents who have a shopping intention. In this way presented output variable puts the aforementioned problem into classification problem.
As evaluation approach, the stratified 10-fold cross-validation was selected. This method splits the data into ten approximately equal partitions. One-tenth of the data is used for testing, and nine-tenth for training. This procedure is repeated ten times so that in the end, every instance has been used exactly once for testing. Finally, the 10 error estimates are averaged to yield an overall error estimate. Since stratification is present, each class is properly represented in both training and test sets (Witten et al., 2011).
As a measure of success of the model, classification rate was used on the testing sample.

3. RESULTS AND DISCUSSION

In order to create a decision tree model, several algorithms were used. Results that these algorithms achieved are given in Table 2.

Table 2 – Decision tree results

Decision tree algorithm	MinNumObj*	Number of Leaves	Size of the tree	Correctly Classified Instances	Incorrectly Classified Instances
J48	2	21	30	246 (83.39%)	49 (16.61%)
J48	5	14	22	246 (83.39%)	49 (16.61%)
J48	**10**	**6**	**11**	**250 (84.75%)**	**45 (15.25%)**
RandomForest				**250 (84.75%)**	**45 (15.25%)**
RandomTree			198	211 (71.53%)	84 (28.47%)
REPTree			10	239 (81.02%)	56 (18.98%)

* The minimum number of instances per leaf

From the Table 2 it can be seen that RandomForest, as well as J48 algorithm produced the highest rate of accurate classification of 84.75%. J48 algorithm was tested in three ways, changing the minimum number of instance per leaf parameter which defines the minimum number of respondents that is required in a leaf. The larger number of instances in a leaf, the smaller size of the tree. Default number of instances in J48 algorithm is 2, but it produced a very large tree. Authors increased that number and it gave us a smaller tree and increased accuracy of classification.
Using the Weka Experiment Environment, a statistical significance test of one learning scheme (J48 with at least 10 instances per leaf) versus five others was conducted. Testing showed that there is only a statistically significant difference between J48 algorithm and the RandomTree algorithm, and that J48 algorithm with at least 10 instances per leaf is statistically better than RandomTree on the level of 95% of reliability.
Since there is no statistically significant difference between J48 algorithm with at least 10 instances per leaf and four other algorithms (except RandomTree), it is decided to use that algorithm and build a decision tree. This algorithm (and its earlier versions, like C4.5) is widely and most often used for decision tree models so it is the main reason for choosing this type of algorithm.
Detailed analysis reveal that the tree is equally successful in recognizing respondents who do have a shopping intention (88%), as well as those who do not have a shopping intention (80%).
The result on a test set is often displayed as a two-dimensional *confusion matrix* with a row and column for each class. Each matrix element shows the number of test examples for which the actual class is the row and the predicted class is the column. Good results correspond to large numbers down the main diagonal and small, ideally zero, off-diagonal elements (Witten et al., 2011). Confusion matrix is presented in Table 3.

Table 3 – Confusion matrix

		Predicted Class	
		YES	NO
Actual Class	YES	155	21
	NO	24	95

From the confusion matrix, it can be seen that from the total of 176 respondents who have a shopping intention, decision tree accurately placed 155 respondents. Regarding the class of respondents who do not have a shopping intention, decision tree placed 95 of them in a correct category, while 24 were placed in class of respondents who do not have a shopping intention.

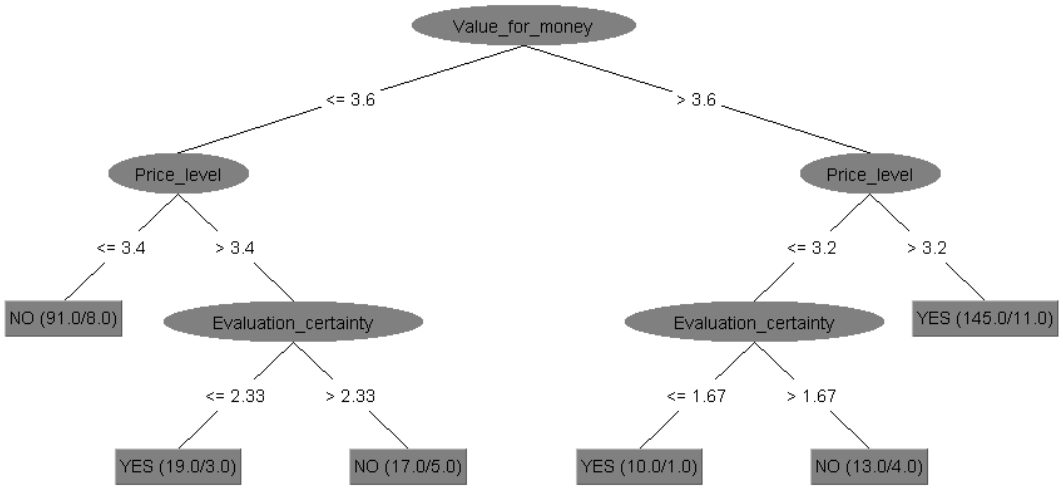

Figure 1 – Decision tree obtained
Source: Authors

Figure 2 shows the structure of composed decision tree using J48 algorithm. The tree consists of 5 nodes and 6 leaves. The first splitting node is variable Value_for_money which represents the price-image dimension Value for money. If respondents have a good opinion about retailer regarding value for money, tree continues to split to the next node on the right side – variable Price_level. If the level of prices in the store is lower (the respondents gave more points in a 5-point Likert scale), the respondents are going to shop in this store. Otherwise, the tree continues to split. The next splitting node is variable

Evaluation_certainty. The respondents intend to shop if this variable's value is lower. The same principle also applies to the left side of the tree.

3.1 Evaluation of significance of input variables

In Weka, the process of analysis of input variables' significance is called attribute selection. It involves searching through all possible combinations of attributes in the data to find which subset of attributes works best for prediction. To do this, two objects must be set up: an attribute evaluator and a search method. The evaluator determines what method is used to assign a worth to each subset of attributes. The search method determines what style of search is performed (Bouckaert et al., 2016).
Hall and Holmes (2003) as the referent techniques of attribute selection recommend information gain and Relief, while according to Ganchev et al. (2006) those are information gain and gain ratio (cited in: Oreški, 2014). Therefore, in order to evaluate attributes, authors took 3 methods into consideration: Information gain, Gain ratio and Relief. As a search method, ranker method was used. Since every method gives different attribute selection result, average value of all methods used was taken as a final result of attribute ranking.

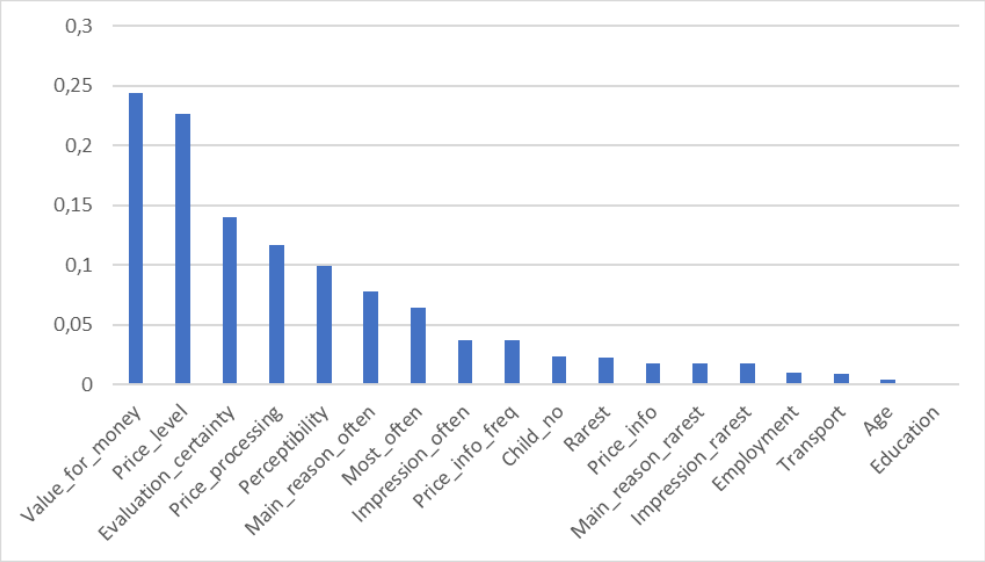

Figure 2 – Graphical representation of input variables' significance
Source: Authors

From the Figure 2 it can be seen that the variable 'Value_for_money' affects the output the most. The variable 'Price_level' is on the 2nd place, followed by 'Evaluation_certainty', 'Price_processing', 'Perceptibility', 'Main_reason_often' and 'Most_often'. Variables related to demographic information about respondents ('Education', 'Age', 'Employment', Child_no'), as well as those related to the retailer where respondents rarest buy, do not have almost any influence on the shopping intention. Analysis showed that value for money that some retailer offers and price level in the store are the most influential variables for predicting shopping intention. This result is matched with the research conducted by Franjković (2017) who used a regression analysis to measure the impact of price-image dimensions on shopping intention.

4. CONCLUSIONS

In this research, several decision tree models for classification of respondents by shopping intention were compared. The models consisted of 18 input variables, and the output variable was shopping intention. All models, except the one that used RandomTree algorithm, achieved relatively high classification rate (over the 80%). The highest classification accuracy of 84.75% gave J48 and RandomForest algorithms. Since there is no statistically significant difference between those two algorithms, authors decided to choose J48 algorithm and build a decision tree. This algorithm is the most common used algorithm for decision tree models. Created decision tree is equally successful in classifying both classes as well. The value for money and price level in the store were the most significant variables for classification of shopping intention. Variables related to demographic information about respondents and those related to the retailer where respondents rarest buy, do not have almost any influence on the shopping intention. Limitation of this research could be relatively small sample (for this type of data analysis) and unequal representation of respondents regarding employment, education and children number. Future study plans to compare this model with some other data mining techniques, such as neural networks or support vector machines since these techniques achieved very good accuracy in some previous research in this field.

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QUALIDADE DOS SERVIÇOS INTERNA E EXTERNA: REFLEXÕES DE EMPREGADOS E CLIENTES NO ESPELHO

INTERNAL VERSUS EXTERNAL SERVICE QUALITY: REFLECTIONS OF EMPLOYEES AND CUSTOMERS IN THE MIRROR

CALIDAD DEL SERVICIO INTERNO *VERSUS* EXTERNO: REFLEXIONES DE EMPLEADOS Y CLIENTES EN EL ESPEJO

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RESUMO

Introdução: Investigar a qualidade do serviço interno (percebido pelos funcionários) e as perceções externas (clientes) de qualidade no contexto da cadeia de lucro do serviço (SPC) constitui uma estratégia promotora da melhoria dos serviços.
Objetivo: Avaliar o impacto da qualidade do serviço interno sobre as perceções de qualidade dos alunos e testar o significado de um vínculo direto entre a qualidade do serviço interna e externa.
Métodos: Medimos a qualidade do serviço percebido usando o instrumento SERVPERF e a abordagem de modelos multinível com o HLM 7.01.
Resultados: Os resultados empíricos suportam uma ligação entre perceções de qualidade de serviço interno e externo. Mostramos que quando os funcionários (professores) percebem que os serviços da universidade são de alta qualidade, isso tem um efeito positivo spill-over sobre as perceções gerais dos estudantes acerca da qualidade dos serviços universitários.
As perceções da qualidade do serviço interno também estão positivamente relacionadas com a perceção dos alunos sobre confiabilidade, capacidade de resposta e garantia de qualidade.
Conclusões: As perceções da qualidade do serviço interno pelos membros da faculdade estão positivamente relacionadas com as perceções de qualidade dos alunos. A comparação dos níveis de qualidade de serviço interno e externo ajudará os gestores a definir prioridades para alocar recursos para melhorar a qualidade.

Palavras-chaves: Qualidade do serviço interno; Qualidade do serviço externo; cadeia de serviço.

ABSTRACT

Introduction: The purpose of this study to investigate internal service quality (as perceived by employees) and external (customer) perceptions of quality in the context of service profit chain (SPC).
Objective: The objective of the study is to evaluate the impact of internal service quality on students' perceptions of quality and to test the significance of a direct link between internal and external service quality.
Methods: We measured the perceived service quality using a SERVPERF instrument and the multilevel modeling approach with HLM 7.01.
Results: The empirical findings support a link between perceptions of internal and external service quality. We show that when employees (faculty) perceive university services as being of high quality, it has a positive spill-over effect on students' overall perceptions of the quality of university services. Perceptions of internal service quality are also positively related to students' perceptions of reliability, responsiveness and quality assurance.
Conclusions: The perceptions of internal service quality by faculty members are positively related to students' perceptions of quality. Comparing the levels of internal and external service quality will help managers define priorities for allocating resources to improve quality.

Keywords: Internal service quality; External service quality, Service-profit chain.

RESUMEN

Introducción: Investigar la percepción de la calidad del servicio interno (percibida por los empleados) y externo (cliente) en el contexto de la cadena de beneficios del servicio (SPC) constituye una estrategia promotora de la mejora de los servicios.
Objetivo: Evaluar el impacto de la calidad del servicio interno en las percepciones de calidad de los estudiantes y probar la importancia de un vínculo directo entre la calidad del servicio interno y externo.
Métodos: Medimos la calidad de servicio percibida utilizando un instrumento SERVPERF y recurriendo a la herramienta de los modelos multinivel con HLM 7.01.
Resultados: Los resultados empíricos apoyan un vínculo entre las percepciones de calidad del servicio interno y externo. Mostramos que cuando los empleados (profesores) perciben los servicios universitarios como de alta calidad, tienen un efecto positivo en la percepción general de los estudiantes sobre la calidad de los servicios universitarios. Las percepciones sobre la calidad del servicio interno también están positivamente relacionadas con las percepciones de fiabilidad, capacidad de respuesta y garantía de calidad de los estudiantes.
Conclusiones: Las percepciones de la calidad del servicio interno por parte de los profesores están positivamente relacionadas con las percepciones de calidad de los estudiantes. La comparación de los niveles de calidad del servicio interno y externo ayudará a los gestores a definir prioridades a la hora de asignar recursos para mejorar la calidad.
Palabras Clave: Calidad; Servicio interno; Servicio externo; Cadena de servicio-beneficio.

INTRODUCTION

In the last four decades, the context of services has dramatically changed as has the focus of academic and empirical research in the marketing and management of services. The role of customers and employees in services, their satisfaction, loyalty and perceptions of service, are one of the priorities in service research (e.g. Yee et al., 2009).

Some of the most intriguing topics in services refer specifically to customer-employee interactions, their roles in the service process and conceptualization of service quality, customer satisfaction and loyalty, confirming in most cases causality between service quality, satisfaction, loyalty and organizational performances (Gremler & Gwinner, 2000; Parasuraman, Ziethaml, & Berry, 1988).

The service-profit chain framework (SPC) (Heskett, Jones, Loveman, Sasser, & Schlesinger, 1994) is a theoretical framework developed in the mid-1990s that connects all mentioned concepts and provides comprehensive and plausible conceptual arguments for inter-relations and a link between internal (employee-based) and external (customer-based) concepts of services. Until recently, the SPC had very little empirical verification, and due to the model assumption, that demands a dyadic (provider-customer) approach it has been difficult to design and carry out a comprehensive study, so researchers have focused on one side of the dyad (either providers or customers). Lately, the SPC has been put under the spotlight (e.g. Hogreve, Iseke, Derfuss, & Eller, 2017) and in this recent meta-analytic review Hogreve et al. (2017, p. 2) note that research on this topic still offers "…fragmented, partially ambiguous knowledge".

It is against this background that our study aims to explore the link between employee and customer perceptions of service quality by assessing the level of quality perceived by employees and finding out how it relates to the level of quality perceived by the customer. In line with the SPC propositions (Hogreve et al., 2017), although customers are usually unable to assess the perceptions and thoughts of service employees, there is a possibility that employees' perceptions can affect the formation of the customers' perceptions. Originally the SPC did not envisage a direct link between internal (ISQ) and external service quality (ESQ), however, our study aims to isolate this ISQ-ESQ link to contribute to the understanding of employee-customer interactions.

We empirically test the link between employee and customer perceptions of service quality at a university, using students and faculty members in different departments and assess the effect of department-level employee perceptions of quality on students' perceptions. A university represents a good setting for examining employee-customer links as it offers a high-contact and high-involvement service where the faculty members and the students co-create the service experience and where contact between them is crucial for the service provision to be successful. A faculty often constitutes the equivalent of an institution in the eyes of the students as quality assessment is primarily directed towards them. On the other hand, a university is reliant on its faculties who act in a similar way as 'branded goods' for the university, creating and sustaining its reputation, so in such a setting we can discover whether there is a transition from employee perceptions of quality to customer perceptions of quality.

1. THEORETICAL FRAMEWORK

Traditionally, acquiring customers has been an objective of marketing strategies, but in highly competitive business environments organizations have been forced to increase the emphasis on the quality of the service (SQ) and customer retention. Although it depends on the service outcome and process, usually the most influential factor on customers' perceptions of external service quality (Grönroos, 1984; Parasuraman et al., 1988) is the service employees and their role in and contribution to the service process (Hooper et al., 2013). Additionally, in high-contact services, customers play an active role in the service process by contributing to quality, satisfaction and value (Bitner, Faranda, Hubbert, & Zeithaml, 1997). Service employees have a dual role – they are providers of services for external customers but they are also internal customers who buy internal services, provided by other individuals or departments in the company (Wilder, Collier & Barnes, 2014). Employees evaluate ISQ by using ESQ criteria, through the same or adapted models (Hallowell, Schlesinger, & Zornitsky, 1996; Heskett et al., 1994).

External and internal service quality are usually defined in the same way (André et al., 2017; Brooks, Lings, & Botschen, 1999; Kang, James, & Alexandris, 2002), based on performance-expectation of external service quality (Frost & Kumar, 2000) and on the exploration of comparability between dimensions of internal and external quality. Still, some researchers believe that ISQ is one of the most important concepts that is far less understood and utilized in contemporary business settings (Yee, Yeung, Cheng, & Lai, 2009).

ESQ is one of the most documented and researched fields in services and the inceptive article on the SERVQUAL model (Parasuraman et al., 1988) had approximately 27,000 citations in Google Scholar as of August 2017. The SERVQUAL model proposed five ESQ dimensions: tangibles, reliability, responsiveness, assurance and empathy, and operated using a performance-expectation paradigm with 22 specifically designed items. Among them and the numerous adaptions to various contexts and several further changes, is the most important one created by Cronin and Taylor (1994) who argued for dropping the expectation side of the SERVQUAL model and for focusing the research on the quality perceived by customers only. Empirical investigation confirmed the superiority of the performance-only model known as SERVPERF (Cronin & Taylor, 1994).

The second prominent model is developed by Grönroos (1984) and encompasses three main concepts that explain the process of creating an overall perception of service quality: (1) technical (output) quality, (2) functional (process) quality and (3) corporate image. Certainly, there are more external service quality concepts, such as importance-performance (IPA), HEdPERF and the Kano model, but they are not the focus of this study.

When it comes to the ISQ concept, it is usually transferred from the ESQ which was developed earlier and to a greater extent. Two approaches regarding the compatibility of external service quality dimensions with the internal service quality context are identified: (1) consideration of dimensions readily transferable in the internal setting, such as SERVQUAL (Brady & Cronin, 2001; Parasuraman et al., 1988) and (2) adaptation of ESQ models by dropping or adding dimensions. When it comes to the first approach, Kang, James and Alexandris (2002) found that SERVQUAL is appropriate for measuring internal service quality at universities, allowing for modification of items for the specific context of educational services. For the second approach, there were several instances of dropping/adding dimensions. In one example, Lings and Brooks (1998) added a proactive decision-making dimension, while Brooks et al. (1999) focused on attention to detail and leadership dimensions.

Caruana and Pitt (1997) designed the INTQUAL model for measuring internal service quality based on the SERVQUAL scale and added items based on qualitative research among the managers of a UK Company where they carried out the study. Eventually, Frost and Kumar (2001) developed the INTSERVQUAL model after identifying three gaps in ISQ evaluations, based on the original SERVQUAL and GAP models. They evaluated relationships among dimensions of the internal service quality perceived by front-line staff (internal customers) and support staff (internal suppliers).

The data envelope analysis is also categorized as the internal service quality model (Seth, Deshmukh, & Vrat, 2005) even though the authors compare quality based on studies in branches of banks instead of internal customers' perceptions of quality. The authors conducted the study to evaluate how effective bank branches are at changing inputs (staff, space, time) to attain service quality outputs; the research is also based on the disconfirmation logic. All the models are performance-expectation based models and require further studies on their applicability. Performance-based SQ models are still waiting to be tested and studied. This is another reason for the decision to apply the SERVPERF model to evaluate internal service quality.

Some authors argue that high ISQ, according to SPC, will create a supportive customer-oriented service culture confirming their commitment and ensuring the provision of excellent services (Groening, Mittal, & Zhang, 2016). Previous studies indicate that companies who invest in employees' abilities and care about them (Hogreve et al., 2017) can build a positive corporate reputation and ensure customers' perceptions of high quality services (Grönroos, 1984; Brady & Cronin, 2001). Although there is no consensus on the exact mechanism of the relationship, theoretical propositions unequivocally argue that ISQ affects the perception of external service quality, directly or indirectly (Hogreve et al., 2017).

Higher education services (HES) are professional services where employees, and academic staff (i.e. faculty) are important and major contributors to SQ, with a superior position of having knowledge and experience. Students as active participants and customers are the ultimate beneficiaries of the process so are important for the successful accomplishment of the university's goals. The faculty as an internal customer and the student as an external customer create networks of interactions in the university with the same goal – providing high quality external educational services (Barnes & Morris, 2000; Dabholkar & Abston, 2008; Hallowell et al., 1996).

In the context of higher education Moraru (2012) discusses the various interests of students and faculty members as the most important stakeholders in the university using the same dimensions of internal and external service quality (Tuan, 2012). Facing rapidly changing technological and competitive environments HEIs are changing the focus to improve service quality for both, internal and external customers (O'Mahony & Garavan, 2012). Strong interaction and active participation of faculty members and students in service processes leads to the assumption of a direct relationship between internal and external service quality which to the best of our knowledge, has not been researched earlier. In this study, we examine the impact of internal service quality on external service quality, expressing ISQ as the group's overall perception of service quality at department level, and the assessment of ESQ as the perception of external service quality of the students attending those departments. In line with the SPC propositions, the higher the ISQ at the department, the higher the ESQ of students will be; thus, we hypothesize:

H1: The University faculty's perceptions of quality at the department level positively influences that departments' students' perceptions of quality.

2. METHODS

To assess the effect of ISQ on ESQ, we carried out a survey in a higher educational setting, involving one university and its employees (faculty) and customers (students). The perceived service quality is measured using a SERVPERF instrument (Cronin & Taylor, 1994) involving five dimensions: tangibles, reliability, responsiveness, assurance and empathy. We conduct two surveys, one with students across different departments (Level 1) and one with the faculty members from those departments, the faculty survey is then aggregated at the level of the department (Level 2).

Both surveys were designed in a similar manner - SERVPERF instrument was adapted to assess students' perceptions of quality for a Level 1 survey (with students) as well as to assess faculty perceptions of quality for a Level 2 survey (with faculty members), measuring items using a seven-point Likert scale. As already noted, one university was selected as a prototype for testing this relationship and study was conducted in correspondence with the management of the university and all employees and students were involved in the study. The survey was on a voluntary basis and no incentive was offered for participation to students/faculty. The questionaries' in hard copy were returned to a questionnaire box as a means of submission.

A total of 330 students (the whole population of universities' student at the given moment) were contacted during the spring semester of 2017. Final dataset (Level 1) involved 265 students (80% response rate) from seven different departments (7-86 students per department) of which 29% are in the first year of study, 34% in the second year of study, 22% in the third year of study, and the rest in their fourth year of study. Female students make up 53%, and the average age is 21 (mean = 20.60, S.D. = 2.24). Students attend departments of social, natural and technical science and all of them are enrolled at the university (a four-year bachelor program) from the very beginning of the study. Most of them are studying on technical and social science department while the least number of students attend film academy. They are coming from different cultural background and geographical locations. On average, students engaged in the survey have a family income of 2.500,00 EUR, which represent an upper-middle echelon income in the country.

A total of 60 employees (all employees of the university) were contacted and asked to fill in the survey during the spring semester of 2017. Final dataset (Level 2) is comprised of 40 faculty employees distributed between seven departments of the university which represents 67% of total faculty members. The length of employment ranged from one semester to 11 years, with the average length being four years (mean = 4.01, S.D. = 3.39). The faculty teaches from one to five courses each year, with a mean of three courses (mean = 2.97, S.D. = 1.29). Those teaching on the technical and economic departments are longer employed since the university started primarily as university for computer science, information studies and economy; faculties have different academic positions, from teaching assistants to professors, at each of researched departments. The age range of faculty members was from 20 years to 58 (mean = 35.55, S.D. = 7.70). The faculty published on average six journal papers, seven conference presentations, one domestic, and two international projects. Out of those interviewed in the faculty, 43% were female and 30% were employed elsewhere in addition to their work at the university. Finally all of them are planning to stay at the university.

3. RESULTS

The reliability and validity of the responses from students and the faculty was assessed using confirmatory factor analysis (CFA), using Lisrel 8.80. At both levels, 10 out of 22 quality items are retained (2 per dimension) after the analysis. The lowest factor loadings are, for students and the faculty respectively: $\lambda_{students}$= 0.67; $\lambda_{faculty}$ = 0.50. The reliability indices are: highest correlation: $\rho_{students}$= 0.48; $\rho_{faculty}$= 0.60, lowest average variance extracted: $AVE_{students}$= 0.51; $AVE_{faculty}$=0.53, and lowest composite reliability: $CR_{students}$= 0.68; $CR_{faculty}$=0.67, and they are acceptable. The model fit for both measurement models is good (Students: χ^2= 76.98 (p = 0.00); df = 25; χ^2/df = 3.07; RMSEA = 0.08; NNFI = 0.95; CFI = 0.97; SRMR = 0.04; GFI = 0.95; Faculty: χ^2= 29.44 (p = 0.24); df = 25; χ^2/df = 1.18; RMSEA = 0.03; NNFI = 0.98; CFI = 0.99; SRMR = 0.07; GFI = 0.88). The resulting items are then aggregated at the level of a separate quality dimension (based on the mean) in both datasets. For the faculty dataset, all indices are further aggregated at the level of the department, so the department-level score for each perceived quality dimension is obtained.

To test the study's hypothesis, a multilevel modeling approach (Hox, 2010), with HLM 7.01 is used, which is an appropriate way to examine cross-level influences that are the focus of our study. An intercept-only model ran first and showed that the overall means of each dependent variable vary significantly from 0 (Hox, 2010). Since the antecedents of quality at the Level 1 are not included, it continues straight to the cross-level model. Results of the analysis are presented in Table 1.

What we observed from the results of analysis is that in most instances (four out of six models), there is a significant and positive effect of the overall perception of quality of the department's employees on the students' perceptions of quality. Namely, the internal perception of quality is a relevant indicator contributing to the explanation for perceived external quality in overall terms (γ = 0.32, $p<0.05$), as well as when it comes to three individual quality dimensions: assurance (γ = 0.53, $p<0.05$), reliability (γ = 0.46, $p<0.05$), and responsiveness (γ = 0.11, $p<0.05$). Tangibles and empathy remain dimensions for which internal service quality is not relevant as per the results of this study.

Table 1 - Multilevel Analysis Results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dependent Variable	Tangibles	Reliability	Responsiveness	Assurance	Empathy	Overall Quality
Level 1 – fixed effects (γ)						
Intercept	5.54***	3.24***	4.07***	4.37***	2.49***	4.51***
Level 2 – fixed effects (γ)						
Control: Average Age	0.01ns	0.05**	-0.07***	0.03ns	0.07***	0.02**
Control: Department Productivity	-0.01ns	0.01ns	0.08***	-0.01ns	0.04**	0.02ns
Main Effect: Internal Service Quality	0.27ns	0.46**	0.11**	0.53**	0.18ns	0.32**

Notes: Coefficients are un-standardized; n (Level 1) = 265; n (Level 2) = 7; *** p<0.001, ** p<0.05; one-tailed significance test; multilevel model equation: *DVij = γ00 + γ01*AGEj + γ02*PRODj + γ03*QUALj + u0j+ rij; DV = dependent variable.*

In the model, it is controlled for employees' age which is positively relevant for reliability, assurance and overall quality (older the employees in the department are – higher the students' perception of mentioned dimensions is) and negatively related to responsiveness (suggesting that departments with younger employees are perceived more responsive). Furthermore, it is controlled for department's productivity (in terms of publications and projects held by the members of department) and it is positively related to responsiveness and empathy perceptions of students. Finally, it is important to note that explanatory power of these models is low, with Pseudo R^2ranging from 1% to 6% of explained variance. This suggests that external service quality is explained by other factors as well, besides the internal service quality.

CONCLUSIONS

The present study contributes to service literature by conceptualizing and empirically examining the direct link between the internal and external service quality in the higher education services setting. Unlike previous studies, which focused their attention either on internal or on external service quality and which assessed several potential mediators between them (Hogreve et al., 2017), this study establishes a direct cross-level link between internal service quality perception of employees, that is, faculty grouped in departments, and external service quality perception of customers, that is, students. We show that the higher the level of internal service quality at the department, higher the perceived assurance, reliability and responsiveness perception of students, which are shown to be the most important dimensions of service quality in previous research as well.

Surprisingly, when it comes to tangibles, employees' quality perception is not relevant for students' perceptions, which indicates that elements that are not related to faculty directly dominate for formation of students' tangibles perception. Perhaps this is due to the fact that faculty usually does not primarily focus on tangibles (i.e. equipment) during the service process, and that tangibles serve more as a medium for reaching the target. On the other hand, maybe the perceptions of tangibles differ so strongly between the two groups that there is no connection with that regard. The same is for empathy dimension for which is shown that faculty-related internal perception of service quality is not related to students' perceptions of understanding and sympathy provided by faculty. Clearly, at least in the case of this empirical study, employees were not able to transfer their perceptions of services (be them positive or negative) on students' perceptions of empathy dimension.

From the managerial perspective, we show that university management should work on improving the internal service quality, since it will have a spill-over or a mirror effect on customers. Matching the level of internal and external service quality may help managers identify "weak spots" and enables defining priorities for allocating resources for quality improvement. Therefore, caring for employees has dual benefits for the universities – in terms of improvement of the organizational culture and overall employee satisfaction and in terms of furthering the service-profit chain and retaining customers.

Confirming a direct link between internal and external service quality represents one of the studies' major implication for theory. It shows that service quality can indeed be mirrored from employees' perceptions to students' perceptions, since they are in a direct and positive relation. Consequently, managerial implication of this study is in showing that in universities, as well as in all high-contact services, management should focus on internal marketing, and internal service quality improvement. This will result not only in better work environment and potentially higher satisfaction of employees, but also in higher perception of quality by service customers – in the case of our study – by students.

LIMITATIONS AND FUTURE RESEARCH

This study is not without limitations. One of its main constraints is that It narrows down the service-profit chain to one focal relationship. Further studies in this area should consider this link embedded in a broader setting of service-profit chain relationships and assess whether direct or indirect effect of internal service quality on external service quality is more relevant. Additionally, further research should aim to identify why the mechanism of transfer from internal to external quality perceptions is not the same for every service dimension and what are the implications of such situation.

When it comes to the context specific research (university setting), the question that should be answered is what could be done by universities to utilize internal resources for improving service quality perceptions of students that are not affected by faculty (front-line employees). Furthermore, to test the generalizability of the findings of the study, it should be tested across different service industries.

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PROCESSOS DE APRENDIZAGEM DOS ESTUDANTES PARA UMA APRENDIZAGEM SUSTENTÁVEL

STUDENT'S LEARNING PROCESSES FOR SUSTAINABLE KNOWLEDGE

PROCESOS DE APRENDIZAJE DEL ESTUDIANTE PARA CONOCIMIENTOS SOSTENIBLES

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RESUMO

Introdução: O conceito de sustentabilidade tornou-se num dos mais utilizados e controversos de hoje. Portanto, é importante desenvolver atividades em todos os contextos educacionais, a fim de aumentar a compreensão dos objetivos para uma prática mais sustentável. Isso também significa que os próprios professores devem assumir mais responsabilidade pelas suas atribuições, interpretar e entender o conteúdo do conceito de sustentabilidade e a exigência de novos cursos. Eles precisam, sem dúvida e naturalmente, novos métodos e ferramentas. Tradicionalmente, os professores planeiam individualmente as suas aulas, avaliações e diferentes tarefas. De forma gradual, isso está a mudar devido às abordagens de sustentabilidade. Hoje, existe a necessidade de práticas coletivas de aprendizagem, não só entre os estudantes, mas também entre os próprios professores ao nível do ensino universitário.
Objetivo: Identificar como os alunos estão a usar o design da unidade para criar conhecimento sobre Desenvolvimento de Negócios Sustentáveis, dentro da divisão de Tecnologia de Qualidade do Departamento de Ciências da Engenharia da Universidade de Uppsala.
Métodos: Este artigo analisa uma unidade curricular denominada Desenvolvimento de Negócios Sustentáveis, na Universidade de Uppsala, no 2º semestre de 2017. A unidade curricular incluiu exercícios teóricos e práticos. Neste estudo foram aplicados métodos de pesquisa qualitativos e quantitativos e usadas como fontes empíricas entrevistas, observações e discussões de focus group com estudantes e documentação da unidade curricular.
Resultados: Os estudantes aprenderam através de processos de aprendizagem individuais e coletivos. Estudos de literatura, sequências de aprendizagem, organizadas individualmente, deram-lhes a compreensão e as ferramentas para uma maior aprendizagem. As discussões em grupo clarificaram e aprofundaram a compreensão do conceito de sustentabilidade. Os alunos perceberam que todo o processo de aprendizagem se tornou mais fácil de gerir através da aprendizagem coletiva. Investigação mostra que é necessário equilibrar esses dois processos de aprendizagem para maximizar a aprendizagem dos alunos. Os processos de aprendizagem coletiva parecem mesmo apoiar alunos de baixa performance.
Conclusões: Os resultados mostram que as organizações educacionais têm grande necessidade de criar ferramentas e organizar estruturas e dar espaço e tempo para esse tipo combinado de aprendizagem para todos os alunos. Aprendizagem na sua globalidade e não apenas para o conceito e questões relacionadas com a sustentabilidade.

Palavras-Chave: aprendizagem individual e coletiva (colaborativa); sustentabilidade; processos; ensino universitário

ABSTRACT

Introduction: The concept of sustainability has become one of today's most widely used and controversial concepts. It is therefore important to develop activities within all educational contexts in order to increase understanding of the goals for more sustainable practice. This also means that professors themselves must take more responsibility for their assignments, interpret and understand the content of the concept of sustainability and demands for new courses. They need, doubtlessly and naturally, new methods and tools. Traditionally professors plan their lessons, different tasks and how they are to be assessed, entirely themselves. This is now slowly changing not least due sustainability approaches. Today there is demand for more collective learning practices, not only among students, but also among university professors themselves.
Objective: This paper aims to study how some students are using the course design to create knowledge on Sustainable Business Development, within the division of Quality Technology of the Department of Engineering Sciences at Uppsala University.
Methods: This paper studies Sustainable Business Development a course at Uppsala University in spring 2017, included both theoretical and practical exercises. In this study it was used qualitative and quantitative approaches, inquires, observations, focus group discussions interviews with students as well as documentation over the course design were used as empirical sources.
Results: Students learned through both individual and collective learning processes. Literature studies, scalable learning sequences, organized individually, gave them pre-under- standing and the tools for further knowledge. The discussions in groups clarified and deepened they understanding of sustainability. They experienced that the whole process of learning got easier to manage by collective learning. Research shows that there is a need for balancing these two learning processes to maximize students' learning. The processes of collective learning seem to even support low performing students.
Conclusions: The results show that educational organizations are in great need of creating tools and arrange structures and give space and time for this combined type of learning for all students. This to create understanding for the issues students are learning in general and not at least on issues of sustainability.

Keywords: Individual and collective (collaborative) learning; Sustainability; Processes; University course

RESUMEN

Introducción: El concepto de sostenibilidad se ha convertido en uno de los más utilizados y controvertidos de hoy. En cualquier caso, es importante desarrollar actividades dentro de todos los contextos educativos con el fin de aumentar la comprensión de los objetivos de una práctica más sostenible. Esto también significa que los propios profesores deben asumir más responsabilidad por sus tareas, interpretar y comprender el contenido del concepto de sostenibilidad y las demandas de nuevos cursos. Necesitan, sin duda y naturalmente, nuevos métodos y herramientas. Tradicionalmente los profesores planifican sus lecciones, las diferentes tareas y cómo deben ser evaluadas, ellos mismos de principio a fin. Esto ahora está cambiando lentamente sobre todo debido a los enfoques de sostenibilidad. Hoy en día existe una demanda de prácticas de aprendizaje colectivo, no sólo entre los estudiantes, sino también entre los propios profesores universitarios.
Objetivo: Identificar cómo algunos estudiantes están utilizando el diseño del curso para crear conocimiento sobre Desarrollo de Negocios Sostenibles, dentro de la división de Tecnología de Calidad del Departamento de Ciencias de la Ingeniería de la Universidad de Uppsala.
Métodos: Este trabajo estudia una asignatura universitaria denominada Desarrollo de Negocios Sostenibles en la Universidad de Uppsala en la primavera de 2017. La asignatura incluyó ejercicios teóricos y prácticos. En este estudio, se aplicaron métodos de investigación cualitativos y cuantitativos y se utilizaron como fuentes empíricas investigaciones, observaciones, entrevistas de grupos de discusión con estudiantes, así como documentación sobre el diseño del curso.
Resultados: Los estudiantes aprendieron a través de procesos de aprendizaje individuales y colectivos. Los estudios de literatura, secuencias de aprendizaje escalables, organizadas individualmente, les dieron pre-comprensión y las herramientas para un mayor conocimiento. Las discusiones en grupos aclararon y profundizaron su comprensión de la sostenibilidad. Ellos experimentaron que todo el proceso de aprendizaje se hizo más fácil de manejar mediante el aprendizaje colectivo. La investigación muestra que hay una necesidad de equilibrar estos dos procesos de aprendizaje para maximizar el aprendizaje de los estudiantes. Los procesos de aprendizaje colectivo parecen incluso apoyar a los estudiantes de bajo rendimento.
Conclusiones: Los resultados muestran que las organizaciones educativas tienen una gran necesidad de crear herramientas y organizar estructuras, así como dar espacio y tiempo para este tipo combinado de aprendizaje para todos los estudiantes. Esto para crear comprensión para las cuestiones que los estudiantes están aprendiendo en general y no solamente en temas de sostenibilidad.

Palabras Clave: aprendizaje individual y colectivo (colaborativo), sostenibilidad, procesos, curso universitario

INTRODUCTION

According to The United Nations Educational, Scientific and Cultural Organization (UNESCO, 1998), the mission of higher education is to educate, train, and undertake of society as whole. However, there exists no single sustainability formula for higher education that fits all countries because of the crucial processes that take place in varying historical, social, economic, political and cultural contexts (Ulrich & Kearney, 2009). An opportunity for one country could be a challenge or risk of another in spite of globalization (UNESCO, 2004). Understanding the concept of Education for Sustainability (EDS), has been one of the major challenges for educators during the last decade due to the debate over the different meanings associated with sustainable development (Jickling, 2006). Sustainable development and sustainability are terms often used interchangeably, but they are not interchangeable. Yet, there is controversy about what the ultimate goal must be and what the means for reaching that goal are. Some claim that sustainable development is the mean to reach sustainability (Lozano, 2008); but others define sustainability as any process that may ultimately lead to sustainable development (Leal Filho, 2000). The term education for sustainable development was preceded by the term environmental education; traditionally, this focuses on coping with nature's issues related to the environment, natural resources, ecosystems, and so on. Nevertheless, during the past years, environmental education has shifted to understanding the significance of sustainable development (Markaki, 2014). The implications of this shift have been discussed in literature (Kopnina, 2012).

Mainly, EDS considers not only aspects of environmental sustainability but also social and economic aspects; this is often called the triple-bottom-line approach (Hacking & Guthie, 2008). The concept of education for sustainable development calls for the transition from professional environmental training to an economically and socially focused model of education based on interdisciplinary knowledge and a complex approach to the development of society, economy and environment (Kasimov, Malkhazova, & Romanova, 2005).

In December 2002, the United Nations General Assembly adopted a resolution, which looked at the period 2005–2014 as the United Nations Decade of Education for Sustainable Development. This promoted the vision of a more sustainable and just global community through different forms of education, public awareness, and activities to be achieved by integrating values, activities, and principles inherently linked to sustainable development into all forms of education, in hopes of ensuring a more sustainable future in social, environmental, and economic terms by helping people change attitudes, behaviours, and values. (UNESCO, 2007). If the world wants to advance on its path toward sustainable development, much more emphasis than before to be placed on ESD was highlighted (Haan et al. 2010).

Different countries across the globe have responded differently to the call to organizing sustainable education (Pigozzi 2010). Higher education institutions are no exceptions. They have endorsed the principles of sustainable education in their teaching and research. This is further aiming to help society and it's organisations to make the transition towards sustainability (Velazquez et al. 2006; Wals 2014).

Curriculum changes have been one of the main efforts to operationalize sustainability at universities. (Ally & Samaka, 2013). At Uppsala University the Chancellor's Office had a government mission to carry out an evaluation of university work to promote sustainable development under the Higher Education Act (1992: 1434). Evaluation is carried out as a thematic evaluation and focused on education for sustainable development (UFV 2016/933). Uppsala University, like other institutions of higher education in Sweden, has been asked to describe, through self-assessment, its work to integrate issues related to sustainable development in its education. There are university-wide goals set for sustainable development in education at Uppsala University. These goals cover all levels of education (basic level and, if applicable, advanced level and research level) and are anchored within the university. The university is actively working to ensure the educational and research-based skills of relevant staff in issues related to sustainable development in education. Uppsala University has courses designed and implemented to integrate sustainable development. This can refer to both content and working methods. At the university there are institutions, program administrators or equivalent that work systematically to follow up and develop the integration of issues related to sustainable development in education. At the university there are also courses where research for sustainable development is used in education. Professors at the university have to create methods and tools to integrate sustainability issues in their courses (UFV 2016/933). This can be experienced as a big challenge for the professors. These designs may also be a challenge for their students. This paper aims to study how some students are using the course design to create knowledge on Sustainable Business Development, within the division of Quality Technology of the Department of Engineering Sciences at Uppsala University.

1. THEORETICAL FRAMEWORK

1.1 Learning

Learning, as a concept, has been looked at from various disciplines and perspectives during history. As a result, the concept of learning is used to cover "a wide society of ideas" (Minsky 1988, p. 120). In this paper there is no attempt to give a full overview of the results of conceptual richness of learning (for an overview, see e.g. Lundgren, Säljö & Liberg, 2014). Instead, attention is given to theories that can bear relevance to the perspective on learning sustainability. Especially interesting are those perspectives that address joint processes of learning that take place in formal educational settings. But there is also a need of combining joint learning processes with the individual learning processes.

1.1.1 The learning individual

Theories of individual learning are crucial for understanding organizational learning. Psychologists and educators have studied individual learning for decades, but they are still far from fully understanding the workings of the human mind. Likewise, the theory of organizational learning is still in its embryonic stage (Lewin, 1997). The importance of individual learning for organizational learning is at once obvious and subtle - obvious because all organizations are composed of individuals; subtle because organizations can learn independent of any specific individual but not independent of all individuals. Psychologists, linguists, educators, and others have researched the topic of learning at the individual level. They have made discoveries about cognitive limitations as well as the seemingly infinite capacity of the human mind to learn new things. Piaget's focus on the cognitive-development processes of children and Lewin's work on action research and laboratory training have provided much insight into how we learn as individuals and in groups. Some of these theories are based on stimulus-response behaviourism. Some focus on cognitive capabilities and others on psychodynamic theory (Piaget, 1970; Lewin, 1997). Numerous other theories have been proposed, debated, and tested, such as Pavlov's classical conditioning, Skinner's operant conditioning, Tolman's sign learning, Gestalt theory, and Freud's psychodynamics (Lundgren, Säljö & Liberg, 2014).

It seems as though, that the more knowledge we gain on learning processes, the more we realize how little we know. A number of theorists make connection between thought and action, according to Schein (1993). Argyris and Schön (1978) argue that learning takes place only when new knowledge is translated into different behaviour that is replicable. For Piaget (1970), the key to learning lies in the mutual interaction of accommodation (adapting our mental concepts based on our experience in the world) and assimilation (integrating our experience into existing mental concepts). Kolb (1984) states that: "*Learning is the process whereby knowledge is created through the transformation of experience*." This means what people learn and how they understand and apply that learning. For example, a student who has not understood the theory cannot use it as a tool in analysing the phenomenon. Learning can then be defined as increasing one's capacity to take effective action.

In theories about learning that focus on the individual, the importance of concrete experience is often emphasised. Kolb (1984) developed a model of the 'learning cycle'. According to Kolb, an individual must go through the following stages in order to learn: experiencing, reflecting, conceptualizing, deciding, and acting. Concrete experiences of actions start the learning process. After that the individual observes the effects of his or her actions and reflects on these. Then the relation between action and effect is conceptualized and generalised into theoretical terms. At last s/he tests the theory by acting accordingly in a subsequent situation. Not all kinds of experiences lead to learning; learning occurs mainly when there are conflicts between expectations and experiences or between ideas and desires. Kolb's theory offers a concrete framework for developing activities within evolving networks for the different phases of the learning process.

This theory on learning is interesting from the perspective of learning of sustainability because it focuses explicitly on the relationship between cognition and action, rather than on the increase of an individual's stock of knowledge. Kolb's theory has though limitations. The focus in the theory is on learning from and through (primarily) individual experience. The theory does not take into consideration the contextual aspect, i.e., how some learning is influenced by social settings. It also overlooks the role of values and interests that influence human action. In the pursuit of learning sustainability, it is important to take both these issues into consideration (Kolb, 1984).

Schön (1995) is an author who integrates values and beliefs in a theory on learning. According to Schön cognition cannot be separated from values and beliefs, nor can cognition and action. Importance of by illuminating the relationship between learning and action, that is, between thinking and doing by Schön (1995) sheds light on the nature of the changes that an innovative project must seek to provoke. Changes in so called theories-in-use that often are tacit, remain implicit and go unnoticed. In order to challenge them, they need to be brought to the surface: people will have to be made aware of their tacit rationalities, and be tempted to reconsider them. A second relevant aspect of Schön's insights is that, even though theories-in-use play a role in the actions of various actors in a similar way, they differ in terms of contents depending on professional training and experience, social background, up-bringing and so on. Because of their intrinsic and fundamental divergence, the theories-in-use that people from different professional and cultural backgrounds hold, will influence the possibility for them to learn collectively, a topic which is to be discussed next.

1.1.2 Collective learning

Organizational learning is more complex and dynamic than a mere magnification of individual learning. The level of complexity increases tremendously in the change from a single individual to a large collection of diverse individuals. Issues of motivation and reward, for instance, which are an integral part of human learning, become doubly complicated within organizations. Although the meaning of the term "learning" remains essentially the same as in the individual case, the learning process is fundamentally different at the organizational level. A model of organizational learning has to resolve the dilemma of imparting intelligence and learning capabilities to a nonhuman entity without anthropomorphizing it. What do we mean by organizational learning? In the early stages of an organization's existence, organizational learning is often synonymous with individual learning because the organization consists of a small group of people and has minimal structure (Ohlsson, 2004).

As an organization grows, however, a distinction between individual and organizational learning emerges, and a system for

capturing the learning of its individual members evolves. Argyris and Schön (1978) posed one of the main dilemmas shared by all who tackle this issue: There is something paradoxical here. Organizations are not merely collections of individuals, yet there are no organizations without such collections. Similarly, organizational learning is not merely individual learning, yet organizations learn only through the experience and actions of individuals.

Collective, collaborative and collegial learning are terms often used in the context of joint learning processes. Ohlsson (2008) describes learning as a social process when the individual change her/his way of thinking about something. Collaborative learning in turn can be considered as a form of joint learning, as a special type of phenomenon, where the starting point is that all learning is based in social activities, but with the collaborative learning processes is meant something beyond the social. Collaborative learning is a situation in which at least two people learn something together (Bruffee, 1993; Dillenbourg, 1999). Collaborative learning activities can include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities. The approach is closely related to cooperative learning, which is the instructional use of small groups so that individuals work together to maximize their own and each other's learning, (Johnson et al., 2008). The difference between collaborative and collective learning is still vague. But according to Granberg and Ohlsson (2016) can this difference consist of that in collaborative learning there is group of individuals trying to learn something together but without to specify or clarify the social context. In collective learning however it is decisive to try to achieve a common understanding.

Collegial learning however, is often used in when discussed schools and professors, is related to the concept of collaborative learning. Collegial learning can be seen as a combination term for various forms of professional development where colleagues through structured cooperation acquire knowledge from a broad concept of knowledge, which also contains abilities and skills. In general, it´s emphasized that peer learning or collegial learning is a method by which a more experienced person helps a less experienced to absorb specific knowledge. Useful methods for peer learning are among others, learning study, lesson study and auscultation with feedback and peer tutoring (Granberg & Ohlsson, 2016).

The importance of the joint learning synergistic effect is often highlighted in the descriptions of the collective learning (Döös & Wilhelmson, 2011). Synergy means that collective processes based on interaction and communication, leads to the new common beliefs that had not been possible for individuals to come up with on their own (Granberg, 1996; Ohlsson, 1996; Wilhelmson, 1998).

Wilhelmson (1998) also draws attention to the importance of symmetry between the participants in a dialogue. Symmetry means that all participants' observations and opinions are given the same weight in the conversation, and to recognize each other experiences as valid. An asymmetric situation means a situation where power positions and opinions consolidation and an evaluative approach prevent an open and common search for new opportunities.

Symmetrical relationships can thus be seen as favourable to collective learning. Habermas (1996) argues that inter-subjective founded collective agreement will not occur from the fact that someone has been manipulated or forced to a particular approach, but requires certain symmetry between the participants.

Ohlsson (1996) has developed the concept of collective learning and created a model of the relationship between individual and collaborative learning, which can be used to illustrate the collective learning. Ohlsson (1996) notes, that the collective learning shapes how the individual perceive their practical work and thereby shape the collective learning individual experience potential. It is important for the collective learning that the experiences described in the collective so that the community can jointly problematize and reflect on the experience (Dixon, 1994; Granberg, 1996; Ohlsson, 1996; Wilhelmson, 1998; Larsson, 2004).

Ohlsson (1996) points out the learning dynamic character and the on-going co-constructing of borders for example, the permissible and the impermissible, is something, which can be perceived as a condition for learning processes. There is a critical, emancipatory dimension of awareness rising of these unconscious conditions for learning. If the individual is unaware of its potential and limitations, the individual cannot respond fully to promote learning.

Any planned, directed change by individuals or collectives is built on learning. Learning can be defined more generally as the process of acquiring knowledge, skills, norms, values, or understanding through experience, imitation, observation, modelling, practice, or study; by being taught; or as a result of collaboration. Prerequisites, according to Dixon (1994); Müllern and Östergren (1995) for collective learning are: the organization and the group should have a structure which promotes learning; interaction, communication and reflection skills are needed; it is important to create a organizational/group culture with openness to change; working methods and ways to inform and communicate with each other are of importance. Collective learning has a dynamic character. The process for collective learning includes awareness of the level of complexity collective learning in organizations/groups compared with learning as an individual process. Awareness of that learning can be a social process when the individuals change their way of thinking about something is essential.

Collective learning in organizational context requires certain symmetry between the participants. Furthermore, Illeris (2007) emphasizes that for successful collective learning it is important that the group or team must be included in a common situation. Participants should have roughly the same opportunities to learn. The learning situation should be of such a character (emotional and jointly) so that it mobilizes the mental energy required to get at a position of substantially learning. It is necessary with synergy, based on interaction and communication, which generate new common beliefs (Dixon, 1994; Müllern &

Östergren 199). It is also important that the experiences are described in the collective so that the community can jointly problematize and reflect on the experiences. Additionally, awareness of that the collective learning shapes how the individuals perceive their practical work is important and thereby shapes individual experience potential. The on-going co-construction of permissible and impermissible borders is elementary in the process. Furthermore, it is decisive to achieve a common understanding.
It is also significant, according to (Granberg & Ohlsson, 2016) to develop action strategies for how the collective knowledge can be used to create collective expertise.

1.1.3 Learning sustainability

Education *about* sustainability is a term referring to declarative knowledge sets associated with sustainability. Declarative knowledge focuses on the facts and steps of processes, the ¨what of knowledge (Taylor, 1999, p. 2). Education *for* sustainability however relates to procedural knowledge. Procedural knowledge moves beyond declarative knowledge to enactment and application - the "how" (Taylor, 1999, p. 2) and "why" uses of knowledge. Distinctions between "about" and "for" are mirrored in sustainability competencies (Barth, 2013; Sipos et al., 2008) and corporate social responsibility literature (Hesselbarth & Schaltegger, 2014). Across this literature, Brundiers and Wick (2010, p. 310) identify three core sustainability competency sets: *a strategic* knowledge cluster; *practical* knowledge cluster and a *collaborative* cluster. The strategic knowledge cluster involves applying declarative and procedural knowledge to assess, analyse, create and develop strategies for sustainable futures. The practical knowledge cluster associates with transferring knowledge into experiential practice (Brundiers & Wick, 2010).
To summarize the discussion of learning above, it can be stated that learning is valued by incorporating both individual and collective learning processes. Sustainability competencies by Brundiers and Wick (2010), and collective learning are compatible. Collective learning can then be seen as a tool and arena for the acquisition of these skills.

2. METHODS

The course of Sustainable Business Development was given at Uppsala University, campus Gotland within Department of Engineering, division of Quality Technology, in spring semester 2017. The goal of the course was to establish a sustainability report for an organization according to the Global Reporting Initiative (GRI) guidelines. Students were supposed to learn to analyse and critically assess a sustainability report based on the UN's sustainability goals, the Swedish national environmental objectives and ISO 26000 standards; to integrate principles, working methods and quality development tools with overall systems for sustainable business development; to discuss and reflect on how the working methods presented in the course can develop and help technology-intensive companies and organizations in their work on sustainability issues. The course was given on campus. A total of 24 students participated, of whom all completed the course. The course was also offered parallel as a distance course but this study only applies to the students who studied on the campus.

2.1 The design of the course

According the professor, course leader and the written course introductions the overall aim of the course was to get an overview of sustainable industrial Business development based on synergies between sustainable development and quality. The course was designed by using short lectures and one day long guest lecture, sequences of scalable learning which was used as preparation for seminars, seven half day seminars, team work and student presentations. Active participation and oral presentations were required for approval at the seminars. The course had two larger written tasks that were graded.

2.2 Research method and design

Inquiries, observations and focus group discussion and interviews with students were performed and used as empirical sources. Access to different course documents and the course e-classroom was also provided. The Uppsala University learning platform (Moodle) was interactive digital platform where the course design and the documents, different links etc. were presented and where communication with the students took place continuously with the course leader. The research design consists of an documentary studies, an introductory survey to the 15 students who wanted to participate in the study, observation of the group work, focus group interview and the final inquiry. The researcher also had possibility to take part of the student evaluation of the course as well as course leaders evaluation report of the same. The results of these data are presented and analysed by using the theoretical findings on learning processes.

3. RESULTS

Using the data from survey, focus group interviews and observations, it was possible to conclude the according the students, the course of Sustainable Business Development and it's structure and design has not been fully promoting their learning. They are telling that they are used to work in different groups during their education. They found that their skills for communication, interaction and reflection has been sharpen and has developed increasingly. The skills for working together have also been improved through the years they have been studying at the university. Students are also aware of the complexity of learning in groups compared studying individually. However, learning in a group is perceived as more rewarding in the long run. It provides broader knowledge when you can share the experiences of others. The students also state that they can change their positions during group discussions because they are open to the opinions of others. According to students, there is a need of some symmetry between participants in the group, but at the same time the groups cannot be too homogeneous. This course, however, was including students from two different programs. This was experienced by many as problematic and something that threatened group dynamics.

Working in groups gives more opportunities for solving the problems, according to students. During group work, students like to treat the problems at a practical level. They can then achieve a common understanding in the group. Students were critical of the course design. Course design did not meet their expectations. They claim to have not received practical applications in and about sustainability. Many are explaining that all they have learned is to write a sustainability report. They prefer not only read the course books themselves because it often only gives one perspective of the problem. It would be better to read several articles in order to exploring several perspectives. Also, more lecturing by course leader could have helped the students to get more common understanding of the subject, they stated.

From the student's statements it appears that, as the course was designed, students did not have time enough for group discussions. Their learning process also became too fragmented due many changes in course design, structure and tasks during the course.

In general, almost all students (15 in total) experience group work as something positive. They often use social media in order to create communication with each others, they create rules for interaction when starting their group activities. They set up a group contract in the beginning of the course about working methods, division of tasks, roles etc. They sometimes practice rolling presidency, sometimes choose a leader for the group.

Someone always takes the leader role, it's never a problem in our courses.

But with some other courses they have studied with, where all the students came from different faculties, not yet knowing each others, to become a leader wasn't as attractive. This led to a more fragmented responsibility in the group. As new students in the program, they exercised the strict principle of justice in performing all tasks. Everyone would do everything and equally. Later on, they have understood that it is better to let people do what they are good at instead of forcing them to do everything. The group's work doing so becomes more efficient and fun for everyone.

Today we are more permissive, we like our differences, and it's ok to do what you are good at.

Informal leaders did not exist during the group work in this course. The time for creating these structures at the seminars was too short. Persons who were not taking their responsibility during the work were pressed to do so by the group. Students did even show understanding for differences by declaring that:

Everyone does not have a skill of seeing what needs to do.

One has to think of the other person - how do they think?

There are individuals that the group has saved.

The group's cohesion may have to go first?

These kinds of statements show the maturity of the group in working and learning collectively. They have learnt and understood that diversity in the group can be developing and that the benefits of the group is to be preferred in order to get work done. At the same time does the group take responsibility for all individuals or members of the group. Students are talking about balancing between permissible and impermissible borders in their group working processes. If individual, a group member doesn't pull his load; he does get a reminder of others of a need of doing so. If this doesn't help either, the group presser increases and the member needs to explain the reasons of not contributing to the whole group. This usually is enough to get the person in line with the group. Students are claiming that there is a clear difference between the program and single course group behaviour. When you are able to work longer period of time together it's sharpening the group dynamics. They also state that there is a need to restructure the group in between, to form new installations, to introduce new members or to break the roles of the group.

This is important for avoiding so called groupthink where the group desires for harmony or conformity and when this then is resulting an irrational or dysfunctional decision-making outcome. Group members try to minimize conflict and reach a consensus decision without critical evaluation of alternative viewpoints by actively suppressing dissenting viewpoints, and by isolating themselves from outside influences. But all in all, these things are depended of the actual working tasks.

CONCLUSIONS

The study shows that for learning outcomes about and for sustainability within the university course, there is a need of both individual and collective learning processes. In order to successfully acquire knowledge about and for sustainability, it is first and foremost necessary that the task is clearly formulated and adapted to the target group. There must be a balance between individual and collective learning processes in order to better utilize synergy effects in learning. In addition, the structure of the course needs to be built up with varying moments where different methods and practices are shifted with each other. If group work moments, through collective learning are used, enough time should be assigned to the tasks to create group dynamic gains. There is also a need to change groupings frequently to avoid so-called, group think. At the same time, it is important not to replace groups too often and to be careful about their composition. It is expressed by several students that the merging of two different program students in this course caused concerns at several of the students. There is a need for balancing the group's composition, not least on the basis of the task. Furthermore, the course was planned to contain both theoretical and practical parts of the subject being studied. In order to be able to create a deeper understanding of the subject, it is necessary to highlight several and even critical perspectives for the students. Learning sustainable business development requires understanding the responsibilities embedded in the assignment, both for the professors who design and teach the course but also for the students that will learn the content of the course. It seems to be the collective learning processes that help the students to understand their responsibilities towards sustainability. Further work is needed for a better understanding of the role of both individual and organizational learning for sustainable competencies. We are in need of knowing what kind of types of mental models that are favourable, which models are appropriate for representing dynamic complexity of learning sustainability; we need methods with which we can capture the understanding of such complexity as well as means through which new learning for sustainability can be transferred to the whole learning organization. The task for educators and collective learning agents is to facilitate participative and systemic critical learning systems and situations where these conditions can be realised.

Research Limitations: The major implication of the study is that it includes only one course and one subject.

Originality/Value of paper: The study makes a contribution to the knowledge about learning processes at the university.

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ALMADRAVA: HOMENS E MAR. RELAÇÕES SOCIAIS NUMA COMUNIDADE TEMPORÁRIA

ALMADRAVA: MEN AND SEA. SOCIAL RELATIONSHIP IN A SHORT-TERM COMMUNITY

ALMADRABA: HOMBRES Y MAR. RELACIONES SOCIALES EN UNA COMUNIDAD TEMPORARIA

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RESUMO

Introdução: Descrevem-se as relações homem/mar, num contexto social, de vivência muito específico numa comunidade piscatória temporariamente estabelecida na praia de Faro, durante o período de pesca do atum. Descobriu-se que essa comunidade piscatória existiu neste lugar por décadas, envolvendo quase 200 famílias durante a época da pesca. Esta comunidade apenas dispunha de recursos limitados e rudimentares, baseados exclusivamente na força humana. Todavia, desenvolveram os seus rituais, crenças e vivência. Hoje, tudo está quase extinto.
Objetivo: Pretende-se reportar as especificidades da organização espacial e das relações socioeconómicas desta Armação, incentivando a continuidade geracional, a tomada de consciência deste património desaparecido, a sua valorização e o despertar da memória coletiva.
Métodos: Utilizaram-se os métodos de ação participativa e o qualitativo, elaborando-se entrevistas não-estruturadas, privilegiando o contacto direto com quem viveu na Armação. Os critérios utilizados para seleção dos entrevistados consistiram na lucidez, sexo, hierarquia social e proveniência geográfica.
Resultados: Existência de uma hierarquia socioeconómica que se traduzia numa hierarquia física; os registos e a divulgação do tema facilitam o acesso à informação.
Conclusões: Este artigo é uma chamada de atenção para as autoridades e decisores para preservação da memória coletiva e, também, um despertar de mentes e consciências, influenciando a sociedade em geral no sentido em que se trata de um alerta para um valor que, em geral, se perdeu e se esqueceu.

Palavras-Chave: Pesca; Atum; Almadrava; Algarve

ABSTRACT

Introduction: Description of the relationship men/sea, on a specific social and life context, in a fishing community temporarily settled in Faro beach, during the tuna fishing period. It was discovered that such a fishing community existed for long decades in this place, where almost 200 families lived only during tuna's fishing season. This community only had limited and rudimentary resources, based exclusively on human strength. Nevertheless, they developed their own rituals, beliefs and way of living. Now everything is almost extinct.
Objective: Report the specificities of the spatial organization and socio-economic relations of this *Armação*, encouraging the generational continuity, the awareness of this disappeared heritage, its valorization and the awakening of collective memory.
Methods: The participatory action and the qualitative methods were used, elaborating unstructured interviews, privileging the direct contact with those who lived in the *Armação*. The criteria used to select the interviewees consisted of lucidity, gender, social hierarchy and geographical origin.
Results: Show the existence of a socioeconomic hierarchy that translated into a physical hierarchy; the registration and dissemination of the theme facilitates access to information.
Conclusions: This paper is a remark to the authorities and stakeholders to preserve the collective memory and, an awakening of minds and consciences, influencing general society in the sense that it will be an alert to a value that, in general, has been lost and forgotten.

Keywords: Fishing; Tuna; Almadrava; Algarve

RESUMEN

Introducción: Descripción de relaciones hombre/mar, en un contexto social, de vivencia muy específico, en una comunidad pesquera temporaria ubicada en la playa de Faro, durante el periodo de pesca del atún. Se descubrió que esta comunidad ha existido hace décadas, con casi 200 familias. Esta sólo disponía de recursos limitados y rudimentarios, basados exclusivamente en la fuerza humana; han desarrollado sus rituales, creencias y vivencia. Hoy todo está casi extinto.
Objetivo: Relatar las especificidades de la organización espacial y relaciones socioeconómicas de esta *Armação*, fomentando la continuidad generacional, toma de conciencia de este patrimonio que ha desaparecido, su valoración y despertar la memoria colectiva.
Métodos: Se utilizaron los métodos de acción participativa y el cualitativo, elaborándose entrevistas no estructuradas, privilegiando el contacto directo con quien aquí ha vivido. Los criterios utilizados para la selección de los entrevistados consistieron en lucidez, sexo, jerarquía social y procedencia geográfica.
Resultados: Existencia de una jerarquía socioeconómica que se traducía en una jerarquía física; los registros y la divulgación del tema facilitan el acceso a la información.
Conclusiones: Esto artículo es una llamada de atención a las autoridades y decisores para preservar la memoria colectiva y, también, un despertar de mentes y conciencias, influenciando a la sociedad en el sentido de que se trata de una alerta para un valor que, en general, se perdió y se olvidó.

Palabras Clave: Pesca; Atún; Almadraba; Algarve

INTRODUCTION

Tuna has assumed, over time, a great importance in the economy and in the traditional food of the Algarve and all the Mediterranean peoples. It is one of the constituent elements of the Mediterranean Diet, considered Cultural and Intangible Heritage of Humanity by UNESCO, of which Portugal is a member. It is in the Algarve that there is the Confraria do Atum (Tuna Brotherhood), which demonstrates the importance that this industry has in the region.

Almadrava, an Arabic term meaning: "place of death" (Santos, 1989) was adopted as a designation for what represents a complex system of fixed nets intercepting shoals of tuna, called *atum rabilho*, Nothern bluefin tuna (*Thunnus thynnus* LINNAEUS 1758) on its migration from the Atlantic Ocean to the warmer waters of Mediterranean Sea to spawn, called *atum de direito* and in the reverse direction, after spawning called *atum de revés*. In this migration cycle, the tuna crossed along the Algarve coast, the only zone in continental Portugal where it was fished from the most remote times. The *Almadrava*, located in the sea, was supported by the *Arraial*, located onshore, which consisted of the dwellings of the fishermen and their families, forming the *Armação*, a short-term fishing community, during the fishing season.

Being a fishing system that already existed in the Algarve when the territory was reconquered from the Muslims in 1249 (Lyster Franco, 1947) and having as first known written reference to an *Armação* on the coast of Cabo de Santa Maria (Faro) in the XVI century (Baldaque da Silva, 1891), it is important to inform future generations about this fishing tradition that has been lost in this region. The main information was obtained by non-structured interviews with people involved in this artisanal fishery and photos provided by those, complemented by documents analysis and bibliographic research.

The *Arraial* was geographically and strategically implanted as close to the *Almadrava* as possible, in the sand of the island of Encão (thus designated in 1940 and currently called beach of Faro), included in the zone designated as Cabo de Santa Maria. With the constant mutation that the coast line has suffered due to the movement of sand dunes, the *Arraial* had to be located in the most convenient way, forcing the alteration of its location, which was confirmed by oral testimonies collected, which referred the 1930s of last century as one of those moments. This *Arraial* had the peculiarity of being located in an island between *ria* and the sea, in Ria Formosa, classified as Natural Park and Ramsar site (Instituto de Conservação da Natureza e Florestas, n.d.).

This article intends to report for the first time the specificities of the spatial organization and socio-economic relations of *Armação* of Cabo de Santa Maria, Ramalhete and Forte (CSMRF), situated in Faro, in the Algarve region, in the extreme south of continental Portugal, in southern Europe, at the entrance to the Mediterranean Sea.

1. METHODS

The use of bibliographic publications, the informal collection of photographic elements and the dialogue with the people who have lived this experience, are essential to consolidate the gathered knowledge and information.

The data collection helps to define the object of study in order to know it better, and to perceive the relations between the parts that constitute it and the interactions between the object and its surroundings (Serra, 2006).

For the construction of the conceptual base, the methods designated by the previous author as a 'participatory method of action' and the 'qualitative method' were used. In the first method, the researchers engage with certain social groups, registering the oral testimonies as a way to facilitate the understanding of the *modus vivendi*. In the second method, the object of study is described with the purpose of deepening the knowledge about it, assuming a description of the observed events, under the intended approach of the point of view.

The collect of information directly from a territory and the populations that make up that territory, as well as the formation of an empirical basis that allow conclusions, constitute an important part of the research, requiring a lot of time and resources, and at this moment new knowledge is produced (Serra, 2006).

Only by traversing the territory and carrying out surveys it is possible to create a new knowledge on the subject (*ibidem*), even if one cannot observe the phenomena, as is the case of the *Armação* of CSMRF, once it has disappeared.

This type of survey has an eminently descriptive character about the environment that surrounded the inhabitants of the *Armação*, aiming the description of objects and events, including the opinion of the people in these situations. Therefore, it is a question of phenomenological, informative or descriptive surveys, as designed by Serra (2006).

In this sense, non-structured interviews were developed with the people who lived in the *Armação* of CSMRF, privileging the direct contact with these people and the objects of the survey.

The criteria used to include the interviewees, in order to have some reliability, were the following:

• Only the testimonies of those who still had vivid and coherent memories were considered; • Different genders; • Different backgrounds in the social hierarchy; • Different geographical origins.

Due to these criteria, the interviewees are as follows:

• Age: 94; Gender: female; Social hierarchy: widow of the last *Mandador*; Geographical origin: Lagos; Onward referenced as: HV.
• Age: 88; Gender: male; Social hierarchy: *Companheiro*; Geographical origin: Faro city; Onward referenced as: FL.
• Age: 88; Gender: male; Social hierarchy: *Companheiro*; Geographical origin: Faro beach; Onward referenced as: JM.
• Age: 76; Gender: male; Social hierarchy: *Companheiro*; Geographical origin: Armação de Pêra; Onward referenced as: BP.

• Age: 91; Gender: male; Social hierarchy: *Companheiro*; Geographical origin: Armação de Pêra; Onward referenced as: CP.
As a way of processing and evaluating the contents of the testimonies, the authors sought to support this information with the use of cartography, photography and bibliography about the subject.

2. MODUS VIVENDI IN THE ARMAÇÃO

2.1 Life at sea: Almadrava

In a more detailed description, *Almadrava* was a tuna-trapping apparatus: a complex system of fixed nets in the sea, vertical, suspended on the surface by floating buoys tied to the seabed with iron anchors, with a great extension. The purpose of this system was to intercept the tuna, routing along its nets, forming labyrinths, until it gets cornered in the central part, *Copo*. Once there, the tuna was caught by moving the nets, obeying a complex technique, by the use of a horizontal net, lying on the seabed, which was raised thus pushing the tuna to the surface – *a Levantada*. *Almadrava* was divided in three main parts (Baldaque da Silva, 1891):

• *Quadro*, central part, that includes the *Copo*, where the tuna was retained and captured;
• *Rabeira*, a net that stretched from the *Quadro*, in the middle of the sea, towards the coast line, to the Northwest, close to the sand, reaching about 4,000 meters;
• *Quartel*, another net that extended from the *Quadro*, in an opposite direction to the coast line, to the Southwest, also in the sea, reaching about 4,600 meters.

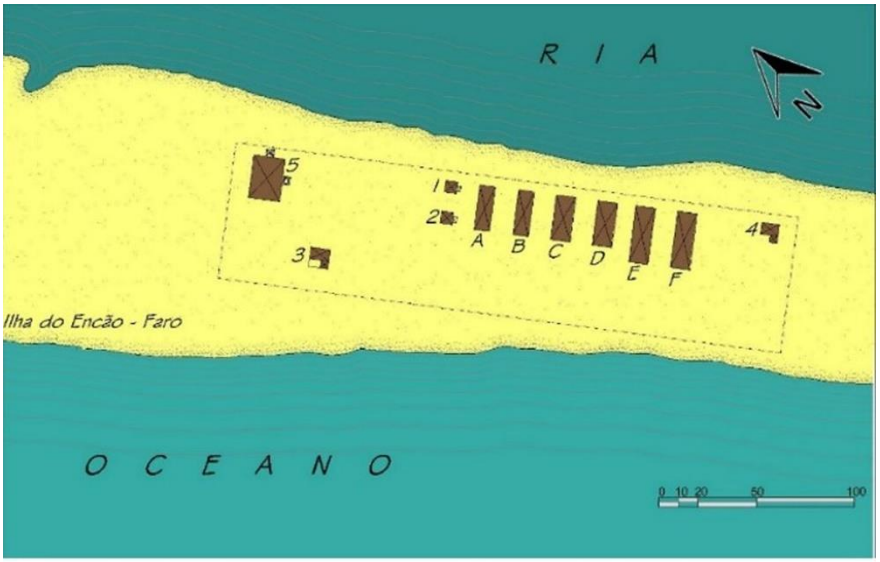
The three main parts of the *Almadrava*, above described, formed a colossal barrier within the sea, with such a dimension that its location and development was in the hydrographic plans of the Algarve coast.
Almadrava of CSMRF caught the tuna, *atum de direito*, which was the tuna of major commercial value, with more fat, being nowadays very appreciated especially by the Japanese, currently the world's largest consumers of this fish.
The *Armação* of CSMRF was the largest in the Algarve since 1931.
In 1935 the *Almadrava* had an extension of approximately 10,000 meters at sea surface and its central part was extended to a depth of 20 meters. There were used 70,000 meters of steel cable from 2 to 3.5 inches, 90,000 kilograms of cork for the confection of floating and signaling buoys, 400,000 square meters of fishing net of various dimensions and were attached to the seabed through 350 iron anchors of 2 to 3 meters long which weighed a few hundred kilograms, each (Brito, 1943).
The *Arraial*, onshore, had to be very well structured and organized in order to give appropriate support to a structure of such dimensions, especially because all works was carried out manually, without using mechanical means. At the beginning of the season *Almadrava* was transported and mounted on the sea in stages for several days. During the season, all this equipment was handled and maintained. At the end of the season everything returned from the sea, in stages, to onshore.
Due to the salary received, which was directly proportional to the required responsibility and skills, an organizational hierarchy was formed. At the top of the hierarchy was the Master, *Mandador* or *Mestre* as he was best known by the fishermen. The *Mandador* ran the whole team and was responsible for the execution and orientation of all operations, including those related to the life of the community. He was the brain of the *Armação*, with great experience and knowledge. He had the power and control of techniques and secrets that were only shared among his predecessors.
The *Mandador* controlled and coordinated the two shifts: sea and onshore, under the guidance of the *Preguiceiro*, who were his direct assistant and to whom he delegated powers in his absence. Below the *Mandador* was the clerk, *Escrivão*, in charge of the daily written record of all that was going on in the *Armação*. His tasks were the handling of all administrative part and the count of the caught tuna, and he was also responsible for the weekly payments of the fishermen's salaries.
The *Interinos* were fishermen who run small groups of fishermen for several activities and were the assistants of the *Preguiceiro*. They were chosen from the most skillful and experienced fishermen of the community.
The *Companheiros* were all the fishermen and the work force of the *Armação*. There were also other elements indirectly related to fishing namely, the doctor, pharmacist, carpenter, caulkers, barber (who went every Sunday to *Arraial* for shaving and cutting hair), tavern keeper and warehouse attendant. This short-term fishing community was made up of people from different Algarve sites, namely Faro, Quarteira, Armação de Pêra, Lagoa, Olhão, Santa Luzia, Culatra, Fuzeta and Tavira, resulting in an exchange of knowledge and habits, fostering mutual acculturation.
The *Companheiros* were divided in two shifts: onshore and sea. In the shift onshore, in the *Arraial*, all necessary items for the maintenance and repair the nets were prepared. Steel cables, floating buoys made of cork involved in fishing nets, and wooden vessels which were damaged during the fishery, were arranged and mended.
In the shift of the sea all the maintenance and repair operations of *Almadrava* were carried out in the open sea, such as the signaling and protection against other vessels that were approaching.
When the tuna began to enter in the *Quadro*, it was down to this shift to do the counting and to communicate with the *Mandador* when he was ashore. When the *Mandador* thought it was time to raise the nets, whether by the number of fish in the trap or for other reasons, such as an approach of tuna predators, which could damage the nets, then he ordered: *a Levantada*.

2.2 Life onshore: Arraial

Spatial Organization of *Arraial*: in 1935 (Brito, 1943) the *Arraial* was on an island and had 144 *Companheiros*. It consisted of the house of the *Mandador*, of the *Escrivão* and the director, all made of wood structure with zinc roofs. There were also about 30 houses for *Companheiros*, all made of reeds (*junco* or *barrão*) with wooden doors and without windows. Some reed houses had two and three doors and each door corresponded to a division where a family lived. In its interior, the floor was made with thick rope rolled forming a kind of carpet. They also used thin ropes and cork to make suspended shelves hanging at the inside walls of reed's structure to make the most of the available space, which was reduced. In the house of the direction there was a belvedere to be able to observe better the fishery. There was the small market and bar (*venda* and *bar*) or canteen where food was purchased (HV, oral information, November 2016).

There was no electricity or drinkable water or sanitary infrastructures. In this part of the island there was a freshwater well that was only used to wash the dishes. The management provided firewood to the *Arraial* to be able to cook. Some families cooked away from home in view of the safety aspect, as the houses were made of reed (*ibidem*). Although the *Arraial* was a highly structured organization, which allowed each member to know exactly what work was to be performed, pause moments were rare due to the constant bustle from the beginning in the month of March to the end of June, season period. Day-to-day life began early in the morning, with a *Companheiro* knocking at the doors of all the others, shouting: *Arriba com Deus camarada!* that is, "Stand up with God, comrade!" (HV, oral information, November 2016). From that moment, each one had to be in his place of work in 30 minutes. The day-to-day life was spent outdoors. When the *Companheiros* went to the sea, very early, it would ring the bell in the *Arraial* and only returned at the end of the day. There was no work schedule. If it was necessary to get up in the middle of the night the *Companheiro* was ready and available (*ibidem*). The nets and iron anchors were stretched out along the sand right next to the houses of the *Companheiros*, until being taken to the sea. There was no storage place to store the nets and floating buoys, and by the end of the season they were wrapped into the boats' sails and stored inside the houses (*ibidem*). Before 1910 a wooden chapel existed in the center of the community, with a wooden altar with the image of Santo António, also in wood, which was destroyed by political motivations resulting from the establishment of the republic in Portugal, in that year (Prudêncio, 2003).

Later, in 1936, there was a change in the location of the *Arraial*, replacing the old reed houses by six more modern sheds, parallel to each other, perpendicular to the coastline, alphabetically ordered from A to F, built with walls of wood and zinc roof (Fig. 1).



1 - House of the *Mandador;* 2 - House of the *Escrivão;* 3 - House of the Directors; 4 - Bar and small market; 5 – Warehouse; A, B, C, D, E, F – Sheds of *Companheiros.* Between 1,2,3 and 5 – Working Area.

Figure 1 – Scheme of the implantation of the *Arraial* from 1936
Source: authors

They were divided lengthwise into several compartments ordered numerically, from the East and West sides and each shed had, from twenty to twenty-four compartments. Each compartment only had a door with a shutter to the outside, as with the old reed houses (Fig. 2). There was also the small market and bar (*venda* and *bar*), built with the same materials as the sheds, on the East side of the *Arraial*. In the *Arraial* there was already a warehouse in wood structure and zinc roof, to store all the nets and floating buoys during the winter (HV, oral information, November 2016).

Figure 2 – Two *Companheiros* and a child in front of one of the doors with shutters of the sheds
Source: authors' private archive

The importance of these buildings was related to the hierarchical position that each one held in the *Arraial*. The *Companheiros* lived in shared and reduced spaces while the *Mandador* and the *Escrivão* lived separately in isolated and large spaces. Their houses were in front of the working area where the nets, cables, floating buoys and iron anchors were handled, in the access between the sheds and the warehouse, which was the ideal location to control all the works in the *Arraial*. The house of the director was the most isolated and largest, and was used to house a director who wanted to spend the night in the *Arraial* or for the priest to prepare for the blessing of the nets. Most of the time this house was empty (HV, oral information, November 2016). After 1936, until the end of the short-term community in 1967, there were no further changes.

The supply of bread, coffee and sugar in bulk, wine and other products was guaranteed by the small market and bar in the *Arraial* which was daily provided by a vessel named *Barca da Parte,* which came from Faro (FL, oral information, November 2016). Later, in the 1960s there was also the market and bar of "Ti Marreca*"* on the beach of Faro, close to the *Arraial*, where people could eat some appetizers such as boiled or grilled snails, traditionally ate, on May 1st, on Labour Day in Algarve (*ibidem*). There were also the two nearby freshwater wells, as an alternative to the water coming from Faro, which supplied freshwater, one located in the Carga Palha site and the other in Quinta do Lago (JM, oral information, April 2017). According to some testimonies, the popular saints were celebrated in the *Arraial*, Santo António, São João and São Pedro. The space was decorated with sticks and boat sails and there was a popular ball with a camp fire (FL, oral information, November 2016).

All the *Companheiros* lived in the short-term fishing community, under certain rules and conditions, which were updated every year. The *Condições da Matrícula* stipulated the basic rules, maturities in cash and salaries in genders. The salary in cash, through a fixed salary, was usually very low and paid weekly. Then they had the *percentagens* or *partes* or *fortunas* of the tuna caught, which was the percentage of the net value of the sale of the tuna in the auctions, paid at the end of each season. They also received in the form of *caldeiradas* or *comedorias*, which were the number of tunas to be deducted from the total fishery. The *caldeiradas* were the feeding of *Companheiros* and their families.

The role of woman and children. While the *Companheiros* were doing their work, their wives took care of the "house" and the children, cooked the meals and secured the water supply from Faro in the *Barca da Água*. The water was then distributed every day, on the bank of the *ria*, to the earthen jugs that the women carried. Washing their clothes was another of their tasks, an

opportunity they used to socialize without male interference (HV, oral information, November 2016). Some caught clams in the low sea of the *ria´s* estuary obtaining a complement to the feeding; others exchanged the clams for other products that did not exist often in the *Arraial*, such as fresh vegetables and fruits, or even clothes. Before the construction of the bridge, in 1956, access to the *Arraial* was done exclusively by boat. After the construction of the bridge, the access was also made on foot or by donkey, being widely used by traders (*ibidem*)**.** Their free time was spent knitting and *empreita* (basketry). During period of fascist government of Portugal (1926-1974) motto was "God, Homeland and the Family"; so, women were educated to be wives and mothers, beginning at an early age to learn household chores, leaving behind their studies. School-age children attended the local school, located near the *Arraial*. The other younger ones played in the *Arraial*, resorting to what was at hand: they used to play ropes and swings on the enormous iron anchors placed there, played with the cork boards that were left over (Fig.3) and sometimes used them for to play little games, played to the typical games of that time, using what nature gave them, such as sand, stones, pieces of wood, small plants and small insects. On the day of the blessing of the nets the great joke was to scratch with the chalk, not only the nets, cables, floating buoys and iron anchors already blessed, but also what was provided (HV, oral information, November 2016).

Figure 3 – Children sitting on top of the pieces of cork used in confection of the floating buoys
Source: authors' private archive

Ritual of blessing of the nets: the ritual of blessing the nets was associated with the faith of the *Companheiros* and the belief regarding the uncertainty of each day of fishing. The dangers they had to face every day, the precariousness of that profession associated with the poor class of society, the hope and eagerness to catch enough fish to survive and feed their families made them have a great devotion. This ritual of blessing (or baptism) of the nets began when the *Almadrava* was ready to be thrown into the sea in mid-April, always on a Sunday (FL, oral information, November 2016). On that day, the *Companheiros* and their families wore their best robes (Batista & Gonçalves, 2017).
To mark that day the directors gave to the *Companheiros* 1 liter of red wine and 1 kilogram bread. The children received sweets. The priest arrived to the *Arraial*, in a boat, accompanied by the directors of the fishing company; when they arrived at the beach, the priest made the preparations for the ritual, after which he left the house of the directors, accompanied by two *Companheiros*, one with the kettle of holy water and the other with the cross of Christ. The remaining *Companheiros* and their families opened wings for the priest to pass and followed him in procession. Then the nets, the cables, the floating buoys and the iron anchors, spread by the sand, were blessed. The priest preceded some children with chalk in the hand to mark with cross everything which has already been blessed, avoiding repetitions. The ritual ended with the blessing of the main net of the *Almadrava*, the *Copo*, in which the tunas were captured. Then everyone knelt and prayed the *Salvé-Raínha do mar à moda de Armação de Pêra* (Fig. 4), which is the *Salvé-Raínha do mar* prayed in a vibrant way by two brothers in the *Arraial* who came from Armação de Pêra, that passed to the *Companheiros* (BP, oral information, April 2017). It was a very strong moment, intense, thrilled, with many tears and became chilling for the observer.

Figure 4 – Blessing of the nets. *Companheiros* kneeling over the *Copo* of the *Almadrava*
Source: authors' private archive

3. MEN AND SEA: COPEJO

The *Copejo* arose the most varied types of emotions in the *Companheiros*. It was the ultimate proof of all the effort up to that moment. It was the true confrontation of Man against Nature to obtain sustenance (David Florido-Corral, 2013). When the *Mandador* decided that it was time to raise the tuna catch, *a Levantada*, he would ring the bell in the *Arraial* and the onshore shift would join to sea shift to give support and everyone began the preparations for the *Copejo* (HV, oral information, November 2016) (Fig. 5).

Figure 5 – The last *Mandador*, Francisco Custódio Correia Júnior, in action, rightmost person looking down, with Brown coat and light hat, moments before the *Copejo*

Source: authors' private archive

A Levantada began with a technical movement of the nets that slide, drawn by the vessels, in order to reduce the space of the *Quadro* to less than half of its original size. The *Quadro*, originally 360 meters long by 60 meters wide, was now only 146 meters long and 60 meters wide, the *Copo*. The tuna is a frightening fish and now it was starting to feel tight and to get nervous. On the surface, the vessels formed a fence around the *Copo*. Until then the order was silence but when the *Companheiros* began to raise the nets to the surface the order was to make noise to enervate the tuna.

The nets were rising little by little and the tuna had less and less room to move. They shouted: "Ala! Ala! Ala!", cursed, prayed, sang and continued to hoist the nets coordinated by the instructions and the sound of the whistle of the *Mandador* (FL, oral information, November 2016). When the tuna began to rise to the surface, nervous, agitated, and in the distress of the tightness with the rest of the shoal, it tried to jump out of the water, a movement that was used by the *Companheiros*, usually in groups of two, suspended by cables attached to the masts of the vessels, with *bicheiros de mão* in hand, ready to hoist into these, taking advantage of such an impulse. This is the only way to understand how two men managed to bring tuna with 300 kilograms or more to the surface. The water was temporarily red with the blood of the tuna, which is why it was called "The bullfight of the sea". This scenery was an inspiration for great individuals throughout the ages such as: King D. Carlos who accompanied a *Copejo* in 1894 and portrayed this moment with a painting; Júlio Lourenço Pinto in 1894 (writer, politician and literary critic); Manuel Teixeira Gomes in 1904 (7th president of the Portuguese republic and writer); Raúl Brandão in 1923 (military, journalist and writer); Alberto Sousa Costa in 1923 (writer), Carlos Filipe Porfírio, who painted "*O Copejo*" in 1942 (Algarve's painter and filmmaker, friend of Pablo Picasso) and the well-known artist Salvador Dali.

"... The *Copejo* was very handsome! It was like a bullfight: the man and the bull! The fish felt trapped and lifted all that foam in the air! The men sang as they lifted their nets. And then they threw themselves into the sea into the *Copo* to catch the fish that were already tired of fighting..." (description of *Copejo* verbally obtained from HV, November, 2016).

Shortly after the *Copejo*, the tuna caught were moved to the *andainas* that were vessels that transported the fish to Vila Real de Santo António, located on East part of Algarve, for the canning industry. Each *andaina* could carry about 100 tunas (FL, oral information, November 2016).

The fish count was made at sea by the *Mandador* and the *Escrivão* and a flag was then hoisted inside a vessel designated as *Barca das Portas* with a code corresponding to the number of fish caught (JM, oral information, April 2017).

This flag was sighted in the *Arraial*, by a *Companheiro* who soon hoisted another flag of equal code to be sighted in Faro, approximately 5,000 meters away, by the directors. It was the fastest and most effective way of transmitting information in an era where the telephone was a rarity, especially in the case of an island. When the Portuguese flag was hoisted, it meant that they had caught between 700 and 1000 tunas and it was a reason of great joy for the women and children who attended the *Copejo* from the beach (CP, oral information, May 2017), approximately 4,000 meters away.

The fish corresponding to the payment of the *Companheiros* went to *Arraial* to be distributed by them and dismantled or *ronqueado,* which was the designation used due to the noise produced by the brush of the knife along the spine of the tuna. It was dismantled on the top of some stone slabs in the *Arraial* and later divided into several parts, as many as the number of *Companheiros*. Then they were distributed by lot, as follows: the various parts of the tuna were distributed along the sand. Each *Companheiro* had a personal object that was randomly placed by a child upon each part of the tuna. Each *Companheiro* then collected his personal object and the part of the tuna that he left in luck (FL, oral information, November 2016). The *Mandador* kept the roe, the heart, the ears and the fat parts of the tuna loin. The *Companheiros* kept the rest of the tuna.

CONCLUSIONS

Throughout the process of gathering information, it was verified that most of the contacted people showed a high sense of identity with this theme, which is the fundamental basis for generating an anonymous movement of providing informative elements that will complement the knowledge.

The elements found so far in official repositories, such as libraries and historical archives, were very scarce, so it was necessary to contact the people who lived *in loco* at the *Armação* of CSMRF, recording their testimonies, in addition to written information. However, this was also a limiting factor to the study, due to the advanced age of those involved, presently at about 90 years of age. It was for this reason that only five interviewees were obtained.

This method allowed confirming the existence of a socioeconomic hierarchy that translated into a physical hierarchy, mirrored in the spatial arrangement of the lodgings of this small temporary community.

With the records made and with the dissemination of this theme, it is possible to access this information, allowing a generational continuity, awareness of this heritage, its appreciation and the awakening of the collective memory, providing a new revival for it.

During the *Arraial* livelihood, as described, people lived difficult times, when the social conditions offered during the months of the work were precarious. But the *Companheiros*, in spite of the intensive work activity that absorbed them and the risks that were taking, always were optimistic by nature and they knew how to adapt themselves to the circumstances. That is also proved today, with the climate changes, which impose social and technic adaptations to the small communities of fishermen (Shaffril, Samah, & D'Silva, 2017).

The limited amount of tuna caught in later times led to the decision to provisionally close the *Armação* provisionally, which, however, turned out to be definitive, in 1967.

In the short-term fishing community that also ended, there were strong bonds of friendship, camaraderie, family and a great sense of community, as a giant family, similarly to that described by Oncescu (2015) to rural communities.

At present the *Companheiros* are engaged in other activities, most of them have already died and those still alive have lost contact with each other.

While the interviews took place, we realized that this short-term fishing community, although it disappeared 50 years ago, was a marked part of the lives of those who participated in it, which demonstrates the degree of affective bonding that developed with the work, the place and the people.

This way of living and being, through such primary resources, with the exclusive use of human strength, almost has been lost, like its rituals and beliefs, in a territory that has been assaulted for decades by mass tourism.

We hope that this paper would be a tribute to the families involved all through these decades and an awakening of memories, minds and consciences.

The main results of this research are the awareness that this heritage, which is being lost, needs a consequent urgency to an adequate registration and disclosure to the valuation of such asset that is scarce.

This paper is also an appeal to the authorities and stakeholders to preserve the collective memory of a common good that was a *modus vivendi* of a profession that disappeared from the Algarve.

As future developments, the authors intend to compile, sort and disseminate the information that is emerging, allowing different approaches or perspectives of the same theme, with the aim of achieving a more detailed and comprehensive knowledge about it.

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ELEMENTOS DE ONTOLOGIA IDENTIFICADOS EM DIFERENTES SISTEMAS DE CLASSIFICAÇÃO DE ENFERMAGEM

ONTOLOGY ELEMENTS IDENTIFIED IN DIFFERENT NURSING CLASSIFICATION SYSTEMS

ELEMENTOS DE ONTOLOGÍA IDENTIFICADOS EN DIFERENTES SISTEMAS DE CLASIFICACIÓN DE ENFERMERÍA

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RESUMO

Introdução: A Classificação Internacional para a Prática de Enfermagem (CIPE®) inclui uma ontologia para representar os seus termos. No Brasil, a fim de contribuir para o desenvolvimento dessa classificação, foi elaborada uma ontologia, compreendendo a representação de conceitos e termos da Classificação Internacional para as Práticas de Enfermagem em Saúde Coletiva (CIPESC®). A identificação de elementos de ontologia nos sistemas de classificação mencionados ajuda a entender como eles podem ser usados para representar os elementos da prática de enfermagem de forma automatizada.
Objetivos: Identificar elementos de ontologia na CIPE® e CIPESC®.
Métodos: Estudo documental, exploratório e descritivo. A recolha de dados ocorreu pela captura de características estruturais de diferentes versões da CIPE® e da CIPESC®, incluindo a estrutura de eixos e de hierarquia de termos. A análise dos dados compreendeu a comparação entre os elementos das características capturadas e os elementos de ontologia: conceitos, instâncias, propriedades, relacionamentos, restrições e axiomas.
Resultados: As características estruturais da CIPE® e da CIPESC® são apresentadas. Conceitos, propriedades, relacionamentos, restrições e axiomas foram identificados em ambas as classificações.
Conclusões: Uma ontologia garante consistência às terminologias de enfermagem, fornecendo evidências para a prática e contribuindo para a unificação da linguagem em enfermagem. Esta pesquisa facilita o desenvolvimento de ontologias para a prática de enfermagem baseada em terminologias de enfermagem, contribuindo para o desenvolvimento de políticas de saúde pelo uso de ontologias em sistemas de informação.

Palavras-chave: Informática em Enfermagem; Terminologia como Assunto; Representação de Conhecimento

ABSTRACT

Introduction: The International Classification for Nursing Practice (ICNP®) includes an ontology to represent the terms contained within it. In Brazil, in order to contribute to the development of this classification, an ontology was elaborated, comprising the representation of concepts and terms from the International Classification of Public Health Nursing Practice (Classificação Internacional para as Práticas de Enfermagem em Saúde Coletiva – CIPESC®). The identification of ontology elements in the aforementioned classification systems helps to understand how they might be used to represent the elements of nursing practice in an automated manner.
Objectives: To identify ontology elements in the ICNP® and CIPESC®.
Methods: Documentary, exploratory, and descriptive study. Data collection was based on the capture of structural characteristics of the various versions of the ICNP® and of the CIPESC®, including axis structure and term hierarchy structure. Data analysis was performed by comparing the elements of the captured characteristics with the following ontology elements: concepts, instances, properties, relationships, constrains and axioms.
Results: The structural characteristics of ICNP® and CIPESC® are presented. Concepts, properties, relationships, constrains, and axioms were identified in both classifications.
Conclusions: An ontology ensures consistency to nursing terminologies, providing evidence for practice and contributing to the unification of the nursing language. This research facilitates the development of ontologies for nursing practice based on nursing terminologies, contributing to the development of health policies by using ontologies in information systems.

Keywords: Nursing Informatics; Terminology as Topic; Knowledge Representation

RESUMEN

Introducción: La Clasificación Internacional para la Práctica de Enfermería (CIPE®) incluye una ontología para representar sus términos. En Brasil, para contribuir al desarrollo de esa clasificación, una ontología fue elaborada, comprendiendo la representación de conceptos y términos de la Clasificación Internacional para las Prácticas de Enfermería en Salud Pública (CIPESC®). La identificación de elementos de ontología en los sistemas de clasificación mencionados ayuda a entender cómo pueden ser usados para representar los elementos de la práctica de enfermería de forma automatizada.
Objetivos: Identificar elementos de ontología en la CIPE® y CIPESC®.
Métodos: Estudio documental, exploratorio y descriptivo. La recolección de datos ocurrió por la captura de características estructurales de diferentes versiones de CIPE® y de CIPESC®, incluyendo la estructura de ejes y de jerarquía de términos. El análisis de los datos comprendió la comparación entre los elementos de las características capturadas y los elementos de ontología: conceptos, instancias, propiedades, relaciones, restricciones y axiomas.
Resultados: Las características estructurales de CIPE® y CIPESC® se presentan. Conceptos, propiedades, relaciones, restricciones y axiomas se identificaron en ambas clasificaciones
Conclusións: Una ontología garantiza consistencia a terminologías de enfermería, proporcionando evidencias para la práctica y contribuyendo a la unificación del lenguaje de enfermería. Esta investigación facilita el desarrollo de ontologías para la práctica de enfermería basada en terminologías de enfermería, contribuyendo al desarrollo de políticas de salud por el uso de ontologías en sistemas de información.

Palabras Clave: Informática Aplicada a la Enfermería; Terminología como Asunto; Representación de Conocimiento

INTRODUCTION

As a reference terminology for nursing practice, the International Classification for Nursing Practice (ICNP®) allows elaboration of nursing diagnoses, outcomes, and interventions through a combination of the terms included in the classification. In order to represent the terms contained within ICNP®, considering the various possibilities of combinations between its terms, the ICNP® has been represented by means of ontology (Conselho Internacional de Enfermeiros, 2016).

Representing knowledge by means of ontology allows for the automation of reasoning (Gruber, 1993). In the case of the ICNP®, the application of this resource will ensure consistency and precision of the concepts included in the terminology (Conselho Internacional de Enfermeiros, 2011).

The International Classification of Public Health Nursing Practice (Classificação Internacional das Práticas de Enfermagem em Saúde Coletiva – CIPESC®) is the Brazilian contribution to the advancement of the ICNP®. The CIPESC® vocabulary inventory was released in 2010, and it seeks to represent the dimensions, diversity, and broadness of nursing practices (Garcia & Nóbrega, 2010).

Aiming at including the Brazilian contribution to the development of the ICNP®, investigators from the Graduate Program in Health Technology of the Pontifical Catholic University of Paraná (Pontifícia Universidade Católica do Paraná – PUCPR) partially elaborated an ontology – the CIPESC® ontology (Silva, Malucelli & Cubas, 2009; Mattei, 2011; Cubas, Brondani & Malucelli, 2013; Bisetto & Cubas, 2015).

Considering the use of ontology in the elaboration of the ICNP® and the proposal to include the Brazilian contribution to it, this article demonstrates the relevance of the identification of ontology elements in the aforementioned classification systems to understand how they might be used to represent the elements of nursing practice in an automated manner.

The development of an ontology by nurses who are specialists in the field of informatics affects the everyday life of nurses in clinical settings since the ontology can ensure consistency of a classification system, and the use of a consistent classification system can provide evidence for nursing practice as well facilitate the unification of the nursing language. The evidence for practice and the unification of the language can be considered the gap that bridge this research with the everyday concerns of nurses, as nurses do not necessarily need to develop classification systems, but they do need to understand how classification systems are developed so that they can use those systems to provide evidence-based care.

As a function of the aforementioned considerations, this study aimed to identify ontology elements in the various versions of the ICNP® and in the CIPESC® vocabulary inventory.

1. THEORETICAL FRAMEWORK

From the development of the International Classification for Nursing Practice (ICNP®) in 1989, the International Council of Nurses (ICN) has elaborated nine ICNP® versions, consistent with the 2-year ICNP® release cycle, which current version is ICNP® 2015 (Conselho Internacional de Enfermeiros, 2016).

The ICNP® allows combination of primitive concepts to form complex concepts (for example the combination of the concepts 'pain' and 'acute' into the complex concept 'acute pain') (Conselho Internacional de Enfermeiros, 2016). As a whole, the rules for the elaboration of nursing diagnoses, outcomes, and interventions using ICNP® meet the recommendations in the International Organization for Standardization (ISO) standard 18104:2014, which seeks to specify the structures for representation of nursing diagnoses and nursing actions in terminological systems (International Organization for Standardization, 2014).

One of the purposes of ISO 18104 is to facilitate the representation of concepts of nursing diagnoses and actions and that of the relationships among concepts in an adequate manner for computer processing (International Organization for Standardization, 2014).

The ontology is at the core of the ICNP®. It provides a formal representation of 'concepts' (or 'classes') and their interrelationships based on the Classification. The subsequent versions to version 1.0 of the ICNP® (2005) have employed the same technology to arrange their concepts and interrelationships. The releases differ from each other by the addition of new concepts and the removal and replacement of concepts that are no longer required in nursing practice (Hardiker et al., 2011).

In Brazil, the CIPESC® has been used in primary health care in order to stimulate the clinical and epidemiological reasoning, which contributes to the analysis of needs relating to health-disease process of the individual, family and social group (Cavalcante et al., 2016).

The CIPESC® ontology comprised the representation of concepts of different versions of the ICNP® and terms included in the CIPESC® vocabulary inventory and in the dissertations developed at PUCPR (Silva, Malucelli & Cubas, 2009; Mattei, 2011; Cubas, Brondani & Malucelli, 2013; Bisetto & Cubas, 2015).

An ontology is a formal (which means machine-processed) specification (Studer, Benjamins & Fensel, 1998) of a given worldview shared by a community (Borst, 1997).

Ontologies comprise the following elements: concepts or classes, which are the categories relevant to the domain of interest (Studer, Benjamins & Fensel, 1998; Grimm, Hitzler & Abecker, 2007); instances, which are particular, concrete, or abstract objects classified based on the concepts of or those belonging to a definite class (Borst, 1997; Grimm, Hitzler & Abecker, 2007);

properties or attributes, which are the characteristics of concepts or values of the class (Studer, Benjamins & Fensel, 1998; Gruber, 1993; Noy & McGuinness, 2001); relationships, which establish connections between concepts or subsumption relationships (Guarino, 1998); constrains, which set limits to the relationships between concepts (Noy & McGuinness, 2001); and axioms, which are defined as assertions that are always true in the domain (Borst, 1997).

In an ontology, a class may be related to other classes through a hierarchy based on the generic relation – a 'kind of' hierarchy. For example, in the ICNP®, 'Analgesic' is represented as a kind of 'Drug'. Thus, the ontology allows inference that 'AdministeringAnalgesic' would also be a kind of 'AdminsteringDrug'. Considering that classes may be related to other classes via properties, for 'AdministeringDrug', 'AdministeringAct' is associated with 'Drug' via a property called 'hasInterventionalTarget'. Therefore, the ICNP® ontology comprises elementary classes, such as 'Drug' and 'AdministeringAct', which provide the building blocks for composed classes, such as 'AdministeringDrug', which is also included in the Classification (Hardiker et al., 2011).

2. METHODS

This manuscript is a documentary, exploratory, and descriptive study.

As this was a documentary study without direct or indirect participation of human beings, approval by a research ethics committee was not required.

2.1 Empirical bases

The empirical bases were: printed ICNP® 1.0; electronic ICNP® 1.1; printed ICNP® 2.0; electronic ICNP® 2.0; electronic ICNP® 2011; ICNP® 2013; ICNP® 2015; and the CIPESC® vocabulary inventory.

The versions of the ICNP® that preceded version 1.0 were not included in this study because they were not elaborated with an ontology.

2.2 Data collection instruments and procedures

Data collection was based on the visual capture of the structural characteristics of the various versions of the ICNP® in chronological order and of the CIPESC® vocabulary inventory, based on the structures that determine the organization of terms within these classification systems, including axis structure and term hierarchy structure.

2.3 Data analysis

Data analysis was performed by comparing the elements of the captured characteristics with the following ontology elements: concepts (or classes), instances, properties, relationships, constrains and axioms.

3. RESULTS

Table 1 depicts the structural characteristics of the various versions of the ICNP® and the CIPESC® vocabulary inventory according to the axes and hierarchies that determine the organization of the terms included within the axes.

The various versions of the ICNP® exhibit a multi-axial structure. In other words, they include multiple axes, which accommodate terms that represent the elements of nursing practice. All the analysed versions follow the 7-Axis Model introduced in version 1.0, which includes Focus, Judgment, Means, Action, Time, Location, and Client. Starting with version 1.1, lists of assertions of Nursing Diagnoses/Outcomes and Nursing Interventions are included in the structure of the ICNP®.

The structure of the CIPESC® vocabulary inventory comprises eight axes to which terms that represent nursing practice elements are allocated. This structure is similar to that proposed in ICNP® version Beta, which included Nursing Practice Focus, Judgment, Frequency, Duration, Body Site, Topology, Likelihood, and Bearer. In addition to these eight axes, the inventory also includes a list of Nursing Actions, which does not amount to an axis per se.

The various versions of the ICNP® and the CIPESC® vocabulary inventory arrange their terms in hierarchical structures, which are mutually related by means of superclass–subclass relationships. For example, in ICNP®, the term 'wound' is a superclass of the term 'traumatic wound', while the term 'traumatic wound' is a subclass of the term 'wound'.

Table 1 – Structural characteristics of various ICNP® versions and the CIPESC® vocabulary inventory

Classification	Axis structure	Term hierarchy structure
ICNP® 1.0	7-Axis Model	Defined by the sequential order of terms
ICNP® 1.1	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by the sequential order of terms
Printed ICNP® 2.0	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by groups of terms
Electronic ICNP® 2.0	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by the sequential order of terms
ICNP® 2011	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by the sequential order of terms
ICNP 2013	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by the definition of the term
ICNP 2015	7-Axis Model Nursing Diagnoses/Outcomes Nursing Interventions	Defined by the definition of the term
CIPESC® vocabulary inventory	Eight axes derived from the ones in ICNP® version Beta Nursing Actions	Defined by the sequential order of terms

In versions 1.0, 1.1, 2.0 electronic, and 2011 of the ICNP® and in the CIPESC® vocabulary inventory, the hierarchies are defined by the sequential order of terms, which means that they are arranged in sequences according to their common, shared characteristics. The printed 2.0 version of the ICNP® presents hierarchies defined by groups of terms; that is, the terms are not necessarily arranged in a sequential order. The hierarchy of the 2013 and 2015 versions is defined by the definition of the term, which means that the superclass of the term is found in its definition, since these versions dispose the terms in alphabetic order.

Regardless of the arrangement of the order of the terms, in both the ICNP® and the CIPESC® vocabulary inventory, terms are related to their axes by means of superclass–subclass relationships. For example, the term 'wound' is a subclass of the axis Focus, while the axis Focus is the superclass of the term 'wound'. Moreover, since 'traumatic wound' is a subclass of 'wound', 'traumatic wound' is also a subclass of the axis Focus.

From the structural characteristics of the various ICNP® versions and the CIPESC® vocabulary inventory, the following structural elements were identified: axes, terms, superclass–subclass relationships between axes and terms, and

constrains to combinations of terms. This last element was identified once there are established constrains for the combinations among terms for the construction of nursing diagnoses, interventions, and outcomes.
Based on the structural elements, ontology elements were identified in the ICNP® and the CIPESC® vocabulary inventory (Table 2).

Table 2 – Ontology elements identified based on the structural elements of the ICNP® and the CIPESC® vocabulary inventory

Structural elements of the ICNP® and CIPESC® vocabulary inventory	Ontology elements	Examples
Axes	Classes (or concepts)	Focus/Judgment
Terms	Classes (or concepts)	traumatic wound/actual/absent
Superclass–subclass relationships between axes and terms	Relationships (in FOL)/Properties (in DL)	traumatic wound is a Focus/actual is a Judgment/absent is a Judgment
Constrains to combinations of terms	Constrains/Axioms	traumatic wound actual/traumatic wound absent

Observation of the ICNP® 7-Axis Model and the eight axes in the CIPESC® vocabulary inventory shows that the axes facilitate the organization of hierarchical structures for the elaboration of an ontology because they might serve as preset root classes (or concepts).
The relationship between super- and subclasses might be characterised as a subsumption relationship: superclasses contain (subsume) subclasses, while subclasses are contained (subsumed) in the superclasses (Horridge, 2007).
Therefore, from the perspective of ontologies, considering the relationship between an axis and a term in the ICNP® as a subsumption relationship, one might assert that, for example, the Focus axis contains (subsumes) the concept 'traumatic wound'; alternatively, the concept 'traumatic wound' is contained in (is subsumed by) the Focus axis. Furthermore, once the Judgment axis subsumes the concepts 'actual' and 'absent', it can be said that the concepts 'actual' and 'absent' are subsumed by the Judgment axis.
The subsumption relationship also means that being a subclass of 'A' implies being 'A' (Horridge, 2007). Therefore, it is acceptable to assume that 'traumatic wound' is a Focus and that 'actual' and 'absent' are Judgments.
Observation of the subsumption relationship between ICNP® axes and terms showed that the ontology element 'relationship' might be represented by a first-order logic (FOL) binary predicate (Grimm, Hitzler & Abecker, 2007), as shown in the following example: is A (traumatic wound, Focus), which means, 'traumatic wound is a Focus'. Following the same reasoning, considering that 'actual' and 'absent' are Judgments, it can be said that 'actual is a Judgment' [is A (actual, Judgment)] and 'absent is a Judgment' [is A (absent, Judgment)].
The predicate symbol 'is A' represents both a relationship between classes (from the perspective of FOL) (Grimm, Hitzler & Abecker, 2007) and a property that relates classes [from the perspective of description logics (DL)] (Baader, Horrocks & Sattler, 2003). Thus, the subsumption relationship between ICNP® axes and terms allows the identification of the ontology elements 'relationship' (in FOL) and 'property' (in DL).
Considering the establishment of constrains for the combinations among terms for the construction of nursing diagnoses, interventions, and outcomes based on nursing terminologies (International Organization for Standardization, 2014), it was possible to identify the ontology element 'constrain'. For instance, nursing diagnoses and outcomes must include one term from the Focus axis and one term from the Judgment axis (Conselho Internacional de Enfermeiros, 2016); thus, constrains must necessarily be imposed on the scope of possible relationships among terms to meet those requirements.
The constrains for the relationship among terms for the elaboration of a Nursing Diagnosis (ND) and of a Nursing Outcome (NO) can be expressed as follows:

1.∀ (ND) ≡ ∃ (Focus(x) ∧ Judgment(y)), which means that 'for all nursing diagnoses, there exists one Focus and there exists one Judgment'.

2.∀ (NO) ≡ ∃ (Focus(x) ∧ Judgment(y)), which means that 'for all nursing outcomes, there exists one Focus and there exists one Judgment'.

Considering 'x' and 'y' as variables, one value, corresponding to a concept in the Focus axis, ought to be attributed to predicate Focus(x), and another value, corresponding to a concept in the Judgment axis, ought to be attributed to predicate Judgment(y). For example, to compose a nursing diagnosis, the Focus 'traumatic wound' must be combined with a term from the Judgment axis, for example, 'actual'. Thus, the representation to this combination is: (Focus(traumatic wound) ∧ Judgment(actual)), which means that the sentence of the nursing diagnosis is 'traumatic wound actual'. Following the same reasoning, to compose a nursing outcome to the presented diagnosis, the Focus 'traumatic wound' could be combined, for example, with the Judgment 'absent'. Thus, the sentence of the nursing outcome is 'traumatic wound absent', which is represented by: (Focus(traumatic wound) ∧ Judgment(absent)).

The establishment of constrains to the possible relationships among concepts, which comprises rules for the combination of concepts vis-à-vis the elaboration of nursing diagnoses, interventions, and outcomes might also be considered as an 'axiom' because this element determines constrains to the relationships among classes (Studer, Benjamins & Fensel, 1998; Grimm, Hitzler & Abecker, 2007) and comprises an assertion of relationships that are always true within the domain (Borst, 1997).

4. DISCUSSION

The versions 1.1, 2.0, 2011, 2013 and 2015 of the ICNP® exhibit two structures of previously related assertions: Nursing Diagnoses/Outcomes and Nursing Interventions. In all the versions, a definition is attributed to each assertion. From an ontology perspective, the descriptions of ICNP® diagnoses, interventions, and outcomes might be represented by concepts (or classes); thus, no rules are needed for the combination of terms. Nevertheless, the relevance of the 7-Axis Model for the elaboration of assertions not included in the ICNP® should be noted.

The format adopted for term presentation in the printed 2.0 version of the ICNP® requires nurses to be previously acquainted with the classification hierarchy. Otherwise, nurses cannot detect any organization in the arrangement of the terms; thus, they do not know how to use the printed version of the ICNP®.

It is noteworthy that, with each release of a new version, the ICNP® presents an increase in the number of complex concepts, whereas the number of primitive concepts is decreasing (Conselho Internacional de Enfermeiros, 2016).

Any formal terminology should include explicit rules for specific formulation of complex concepts from primitive concepts (Conselho Internacional de Enfermeiros, 2016). The representation of the rules to combine ICNP® concepts in an ontology by means of constrains or axioms makes such rules explicit, as can be observed in the following example: 'for all nursing diagnoses, there exists one Focus and there exists one Judgment'. According to this axiom, every nursing diagnoses must contain one concept from the axis Focus and one concept from the axis Judgment, for example, the nursing diagnosis 'traumatic wound actual', in which 'traumatic wound' is a Focus and 'actual' is a Judgment.

The constrains imposed on the possible relationships and their representation by means of an ontology not only allow for the elaboration of nursing diagnoses, interventions, and outcomes compatible with ICNP® and ISO-18104 requirements but also, by restricting the countless possibilities of combinations among the terms included in the various ICNP® axes, prevent cases of inconsistency and incoherence. Consequently, such constrains might facilitate the development of clinical reasoning among nurses and the unification of the nursing language (Silva, Malucelli & Cubas, 2009).

The use of nursing terminologies contributes to production of knowledge and nursing evidences (Strudwick & Hardiker, 2016). In Brazil, the CIPESC® represents the dimensions, diversity, and breadth of nursing practices in the context of the Unique Health System (Sistema Único de Saúde – SUS) (Garcia & Nóbrega, 2010). In the State of Paraná, Brazil, the CIPESC® is included in an information system to support decision-making within public health policies (Chaves et al., 2011). One of the indicators expected of this system is the incorporation of the elements of nursing practice in the ambulatory information system of SUS (Associação Brasileira de Enfermagem, 2013). However, the ontology of the CIPESC® is not included in that information system.

Therefore, in order to ensure consistency of the concepts within the CIPESC® and, consequently, to provide evidence for nursing practice, it is important to encourage nurses to elaborate the representation of the ontology elements of CIPESC® within information systems which include nursing diagnoses, interventions, and outcomes.

CONCLUSIONS

The identification of ontology elements in the various versions of the ICNP® and the CIPESC® vocabulary inventory contributes to the reflection on how such elements might be used in these classifications to represent the terms of nursing practice as well as the relationships among them.

As a function of the continuous updating of the ICNP® and because of the need to update the CIPESC® vocabulary inventory, the relevance of the use of an ontology for reusing previously modelled knowledge and for explicitly defining the concepts of classifications in an automated manner should be emphasized to avoid inconsistencies, such as redundancies and ambiguities.
The use of a consistent classification system can ensure evidence for the nursing practice as well as contribute to the unification of the nursing language. Thus, the development and use of ontology by nurses is an important field to be explored.
This research can be applied to stimulate and facilitate the elaboration and development of ontologies for the nursing practice domain, based on nursing terminologies.
It is important to note that nurses in clinical settings do not necessarily need to develop classification systems, but they do need to understand how classification systems are developed, including the ontology-based ones, so they can use consistent classification systems to provide evidence-based care.

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A PERCEÇÃO DA QUALIDADE DE VIDA EM PESSOAS COM DEPENDÊNCIA DE DROGAS

PERCEPTION OF QUALITY OF LIFE OF PEOPLE WITH DRUG ADDICTION

LA PERCEPCIÓN DE LA CALIDAD DE VIDA DE LAS PERSONAS CON ADICCIÓN A LAS DROGAS

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Perception of quality of life of people with drug addiction. *Millenium, 2*(4), 69-77.

RESUMO

Introdução: A toxicodependência afeta a vida de muitas pessoas e os dados estatísticos demonstram a abrangência do problema, que se inicia, geralmente, em idades precoces e que se mantém ao longo da vida, com implicações na sua saúde e qualidade de vida (QV).

Objetivos: Avaliar a perceção de QV das pessoas com problemáticas aditivas; comparar a perceção de QV entre os dependentes de drogas ilícitas e os dependentes de álcool; e avaliar se existem diferenças relativamente à perceção de QV, considerando as variáveis sociodemográficas, de saúde e de tratamento.

Métodos: Desenvolveu-se um estudo quantitativo, descritivo e transversal com uma amostra de 108 pessoas, maioritariamente do sexo masculino, com idade média de 45 anos e baixa escolaridade, com um longo historial de consumo de substâncias, especialmente em policonsumos, com início em idades muito precoces e em tratamento de desabituação no Distrito do Porto. Para avaliar a perceção de QV foi utilizado o Quality of Life Índex (QLI) versão portuguesa de Ferrans & Powers.

Resultados: Os participantes percecionaram a sua QV como positiva, não ficando demonstradas diferenças nessa perceção, considerando o tipo de dependência química (drogas ilícitas/álcool); os participantes do sexo feminino (p=0,01), não ativos (p=0,006), que viviam sozinhos (p=0,002), com tratamentos de desabituação anteriores (p=0,01), e que mantinham consumos (p=0,001), apresentaram valores inferiores nos scores do QLI global.

Conclusões: Este estudo permitiu avaliar a perceção de QV das pessoas com dependencia de drogas, e identificar grupos com maior vulnerabilidade, com vista ao planeamento de programas de intervenção mais efetivos.

Palavras-chave: Transtornos relacionados ao uso de substâncias; Alcoolismo; Qualidade de vida

ABSTRACT

Introduction: Drug addiction affects many people's lives and statistical data demonstrate the extent of the problem, which usually begins at an early age and is maintained throughout life, with implications for health and quality of life (QOL).

Objectives: To evaluate the perception of QOL of people with addictive problems; to compare the perception of QOL between the dependents of illicit drugs and alcohol; to evaluate the differences between the perception of QOL in terms of sociodemographic, health and treatment variables.

Methods: A quantitative, descriptive and cross-sectional study was carried out with a sample of 108 people, mostly males, with a mean age of 45 years and low schooling, with a long history of substance use, especially in poly-consumption, beginning on early ages and undergoing treatment in the District of Porto. To evaluate the perception of QOL, the Quality of Life Index (QLI), Portuguese version, by Ferrans & Powers was used.

Results: Participants perceived their QOL as positive, with no differences according the type of chemical dependence (illicit drugs/alcohol); Female participants (p=0.01), non-active (p=0.006), who lived alone (p=0.002), had previous treatments (p=0.01), and who continued to consume (p=0.001) presented lower values in the global QLI scores.

Conclusions: The aim of this study was to evaluate the perception of QOL of people with drug dependence, and to identify groups with greater vulnerability, in order to plan more effective intervention programmes.

Keywords: Substance-related disorders; Alcoholism; Quality of life

RESUMEN

Introducción: La toxicomanía afecta la vida de muchas personas y los datos estadísticos demuestran el alcance del problema, que se inicia generalmente en edades tempranas y que se mantiene a lo largo de la vida, con implicaciones en su salud e calidad de vida (QV).

Objetivos: Evaluar la percepción de QV de las personas con problemáticas aditivas; comparar la percepción de QV entre los dependientes de drogas ilícitas y los dependientes de alcohol; y evaluar si existen diferencias en la percepción de QV, considerando las variables sociodemográficas, de salud y de tratamiento.

Métodos: Se desarrolló un estudio cuantitativo, descriptivo y transversal con una muestra de 108 personas, mayoritariamente del sexo masculino, con edad media de 45 años y baja escolaridad, con un largo historial de consumo de sustancias, especialmente en policonsumos, con inicio en edad muy temprana y en tratamiento de deshabituación en el Distrito de Oporto. Para evaluar la percepción de QV se utilizó el Quality of Life Index (QLI), versión en portugués, de Ferrans & Powers.

Resultados: Los participantes percibieron su QV como positiva. Esta percepción no mostró diferencias significativas, considerando el tipo de dependencia química (drogas ilícitas / alcohol). Los participantes del sexo femenino (p=0,01), no activos (p=0,006), que vivían solos (p=0,002), con tratamientos de deshabituación anteriores (p=0,01), y que mantenían consumos (p=0,001), presentaron valores inferiores en las puntuaciones del QLI global.

Conclusións: Este estudio permitió evaluar la percepción de QV de las personas con dependencia de drogas, e identificar grupos con mayor vulnerabilidad, con vistas a la planificación de programas de intervención más efectivos.

Palabras Clave: Trastornos relacionados con sustancias; Alcoholismo; Calidad de vida

INTRODUCTION

Drug addiction is a current and worldwide phenomenon that affects people's lives, their families and the community at large. Global statistics show the extent of the problem, recognizing it as a chronic disease that generally starts at very early ages and persists throughout life (United Nations Office on Drugs and Crime, 2016). The understanding of this issue, whether due to its epidemiological extensiveness, or its clinical importance, is an unavoidable necessity in the sphere of health programmes for drug addiction (APA, 2014). The complexity and breadth of this issue, although highlighted in different theoretical and practical contexts, has not been sufficiently researched in our country.

On par, QOL is recognized as a measurement of important results in terms of decision-making with regards to resources and the creation of specific health intervention programmes, particularly in mental health (Tran et al., 2012). Health professionals who care for people with addictions are increasingly aware of the need to understand better individual perception about the health status and QOL of drug addicts.

In this sense, the aim of this study is to evaluate the perception of QOL of addicts, compare the perception of QOL between participants who are dependent on illicit drugs and alcohol dependents, and to assess whether there are differences in the perception of QOL, considering sociodemographic variables, health and treatment. Its ultimate purpose is to design a health intervention directed more at the real needs of these people.

1. THEORETICAL FRAMEWORK

The prevailing concepts about the biological basis of the abuse of alcohol and other drugs have changed profoundly in recent years (United Nations Office on Drugs and Crime, 2016; WHO, 2014). Recent advances in genetics, molecular biology, behavioural neuropharmacology and brain imaging have dramatically changed our understanding of the process of addiction and relapse. Dependence has been for several years recognized as a chronic disease involving complex interactions between repeated exposure to drugs as well as biological and environmental factors (APA, 2014).

The data from the World Drug Report indicates that one in 20 adults used at least one illicit drug in 2014 (United Nations Office on Drugs and Crime, 2016). With regard to alcohol abuse, it is believed that throughout the world individuals aged 15 or more consume about 6.2 litres of pure alcohol in 2010 (WHO 2014). These studies also indicate that approximately 29 million people worldwide who use drugs suffer from associated comorbidities, thus emphasizing its consequences for health (Teoh, Yee, & Habil, 2016; United Nations Office on Drugs and Crime, 2016). Similarly, the World Health Organization identifies the abuse of alcohol as a primary cause for over 200 disorders described in ICD-10 (WHO, 2014).

In the European Union, specifically in Portugal, alcohol consumption is high, and in 2010 Portuguese people aged 15 or more consumed an average of 12.9 litres of pure alcohol per year (per capita alcohol consumption) with all the family, social and health implications that entails (WHO, 2014). With regard to mortality data, the number of deaths due to drugs in Portugal was eleven people in 2015 alone, with an average age of 48.5 years, and for alcohol abuse, 84 people perished that year with an average age of 67.2 years (INE, 2017).

A progressive physical and psychological dependence is associated with an obsessive and compulsory need to find drugs. This converges with a deterioration of self-concept and the relationship with society, loss of emotional ties and a set of antisocial behaviours, such as theft, aggression or prostitution (APA, 2014).

Treatment of addictions generally requires not only a long-term intervention, but also a multifaceted and multidisciplinary approach. In addition, because drug addiction usually begins in adolescence or early adulthood and its comorbidity with mental illness is common. We need to expand our treatment interventions for this age group for both substance abuse and psychiatric illness (Silveira, Santos & Pereira, 2014).

Identifying the health needs of a population that requires intervention is the first step in a concerted and efficient intervention (Rocha et al., 2013). In this sense, interest in the assessment of QOL has grown substantially in recent years, although the number of studies that evaluate QOL is still small with regards to people who consume drugs and, particularly, studies which use this concept to assess the effectiveness of interventions in health (Maeyer, Vanderplasschen, & Broekaert, 2010; Moreira et al,2013.). These authors also consider that the analysis of this dimension in drug abuse is of particular relevance given the recognized disorder that drugs provoke in the lives of consumers, at the physical, emotional and social level.

The main factors described as being able to influence the perception of QOL are the demographic (such as gender, age and marital status), educational, socio-economic and racial factors (Moreira et al*.,* 2013).

Assessment of QOL provides relevant information on how people have integrated changes secondary to their disease and treatment into their day-to-day lives, providing knowledge about the transition process over time (Meleis, 2007).

This research was developed based on the relevance of the issue along with the need to better identify situations of greater vulnerability among the population studied. Its ultimate purpose is to design a health intervention directed more towards the real needs of this population.

2. METHODS

This is a quantitative study with a descriptive cross-sectional profile including an overall sample of 108 participants.

2.1 Sample

The non-probabilistic, convenience sampling method was used, with the following study inclusion criteria: dependency on illicit psychoactive substances or dependency on alcohol; being conscious and evenly self-oriented; receiving treatment at health facilities in the district of Porto; agreeing to participate voluntarily in the study.

The sample included 84 males (78%) and 24 females (22%) with an average age of 45 (Min=22 and Max=79 years, SD=10.6), with low level of education (M=7 years of education; SD=3.39) and mostly unemployed (n=62; 57%). Most of the participants lived in the district of Porto and with their immediate families (n=38; 35%), although 20% of the sample lived alone. With regard to health, we must point out that, despite all of them undergoing withdrawal treatment, only 51 (47%) participants reported being sober. A variety of drugs were consumed, including alcohol abuse in isolation (n=20; 19%) or in combination with other drugs, such as heroin, cocaine or cannabis (n=17; 16%) with a range of consumption quantities and methods of administration.

Only 44% of the sample were found to be undergoing their first treatment (n=47); for the majority, this was a new attempt at withdrawal.

As regards the age consumption was initiated, the participants ranged from a minimum of 3 and a maximum of 45 years with a mean age of 18 years (SD=7.1). However, we were able to apprehend alcohol stood out for very early consumption, with 18 participants starting their consumption before 10 years of age. Approximately 76% of the sample (n=82) also mentioned having other diseases associated with addiction, the most common being digestive disorders (n=20; 19%), hepatitis C (n=11; 10%) and respiratory diseases (n=10; 9%).

2.2 Data collection instruments and procedures

The following instruments were used to collect the information:

a. Socio-demographic characterization form for health and treatment, which we constructed, including a set of structured and semi-structured questions;

b. *Quality of Life Index (QLI)* by Ferrans and Powers (Ferrans, 2005; Ferrans & Powers, 2011): an instrument developed to evaluate QOL of both healthy and unhealthy people. It has been translated and adapted into approximately 20 different languages including Portuguese. Its generic version III was adapted to the Brazilian culture by Kimura and Silva (2009) and to the Portuguese culture in a study of renal transplantation patients by Pinto (1998).

The QLI is composed of four subscales: Health and Functioning (HF) with 13 items, Social and Economic (SE) with 8 items, Psychological and Spiritual (PS) with items 7, and Family (F) with 5 items. It also has an overall measure of QOL (Overall QLI). The scale includes 33 items related to *Satisfaction* and 33 related to *importance*. Responses are given on a six-point Likert scale, where 1 is "very dissatisfied" and "not at all important" and 6 is "very satisfied" and "very important."

The QLI scoring procedure first requires items related to *Satisfaction* to be recoded in order to centre the zero of the scale. This is obtained by subtracting the value 3.5 from the response to each item pertaining to *Satisfaction*, resulting in scores of -2.5; -1.5; -0.5; +0.5; +1.5 and + 2.5 for the initial scores from 1 to 6, respectively. Then, the recoded scores for *Satisfaction* are weighted with *Importance* by multiplying the recoded value of each item by the raw value obtained in response to *Importance* (1 to 6). Next, the total QLI score is calculated by adding all of the weighted items answered and dividing by the total number of items answered. The possible variation at this point ranges from -15 to +15. In order to eliminate the negative weighting from the final score, 15 is added to the values obtained, resulting in a total score for the instrument which can range between 0 and 30.

The procedure to calculate the different subscales is similar, considering only the total number of items in the domain being analysed.

The instrument, its scoring instructions and items in each subscale is available on the Internet (https://qli.org.uic.edu/questionaires/pdf/genericversionIII).

The results are shown in scores ranging from 0 to 30 where higher values correspond to greater *"Satisfaction/Importance"* without cut-off points being defined (Kimura and Silva, 2009).

The generic QLI - Version III has not been validated in a consistent manner for the study population, which implies a weighted analysis of the results presented herein. Nevertheless, the values of the *Cronbach's alpha* coefficients for the different subscales presented in this study are acceptable (between 0.60 and 0.80) especially given the small number of items in some subscales (Pais-Ribeiro, 2010). The value of overall fidelity was also acceptable (0.87) and in line with the values in other studies (Ferrans & Powers, 2011; Kimura and Silva, 2009; Pinto, 1998).

In order to collect the data, the potential participants in the sample were referred by a health care professional and contacted by the main researcher after medical consultation. After confirming the inclusion criteria, they were directed to an office, informed about the objectives of the study, the degree of confidentiality, and they were asked if they consented to participate in it. The data collection instrument was then filled in individually or, in the event of difficulties, it was applied as a form by the

principal researcher. All the procedures described in the Declaration of Helsinki were taken into account, such as asking for the permission of the instrument's author, as well as the health facilities.
A database in SPSS, version 22 was created to analyse the data. A descriptive and inferential analysis, was performed and considered $p<0.05$ the minimum significance. Although normal distribution of data for all variables was not confirmed, we decided to use parametric statistics for the analysis in general, considering the sample was $N>30$.

3. RESULTS

In order to achieve the first objective, we conducted the analysis on the sample's perception of QOL as measured by the QLI in each of its subscales and the overall scale, obtaining the results presented in Figure 1.

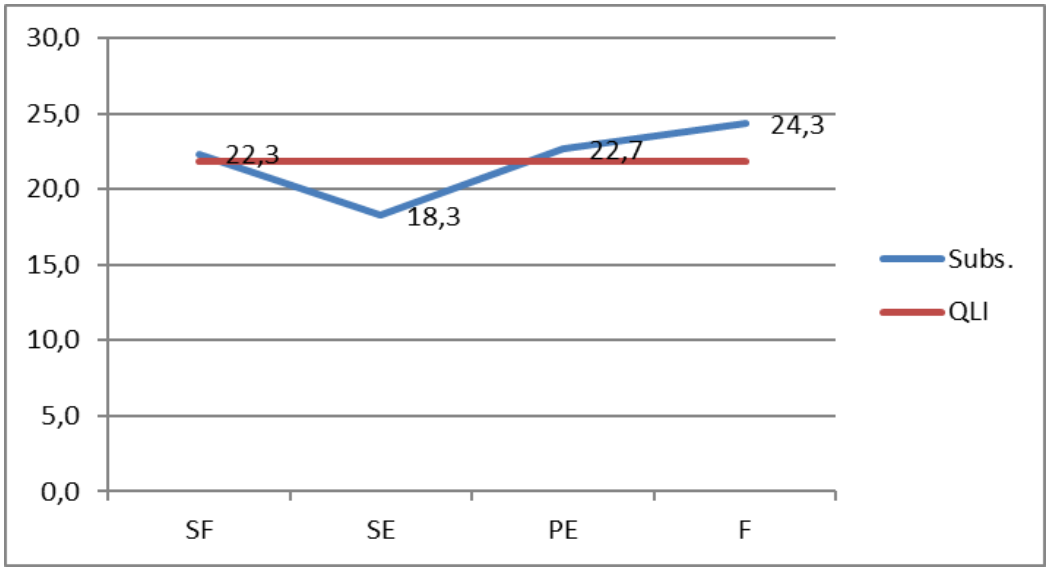

Figure 1. The mean QOL perception score in the different subscales and the overall scale of people with drug addiction
HF-Health and Functionality; SE-Social and Economic; PS-Psychological and Spiritual; F-Family; Subs. – QLI subscales

The above analysis of the graph allows us to conclude that the sample participants evaluate their QOL as positive (considering the 0-30 score), both overall and evaluated in each of the components. The highest average score is located in the "Family" subscale *(M=24.3; SD=*4.49) and the lowest is for the "Social and Economic" subscale *(M=18.3; SD=4.37*).
To reach the second objective and compare the perception of QOL of individuals dependent on illicit drugs and alcohol, we recoded the variable "*Drugs consumed before treatment*" into three-category variable: "*alcohol dependence*" (n=37); "*Addiction to other drugs*" (n=30); and "*alcohol dependence + other drugs*" (n=41).
The One-Way ANOVA F-test revealed that there were no statistically significant differences among the three groups, either for the overall QLI ($F=2.24$; $p=0.11$), nor in any of the subscales: HF ($F=1.21$; $p=0.30$); SE ($F=2.82$; $p=0.06$); PS ($F=1.91$; $p=0.15$) F ($F=1.34$; $p=0.26$).
Finally, and to attain the third objective, we conducted an analysis on the sample's QOL perception, considering the sociodemographic, health and treatment variables using mean comparison tests (Mann -Whitney U test and ANOVA F-test) and the Pearson r correlation.
To facilitate reading the results, they will be presented, according to the variables being analysed.

Santos, A. C., Pimenta, G. F. & Santos, C. B. (2017).
Perception of quality of life of people with drug addiction. *Millenium, 2*(4), 69-77.

Sociodemographic Variables:

a. Sex

Table 1 - Comparison of the means between the sexes for the subscales and overall QLI scale

Subscales/Overall Scale	Male (n=84)	Female (n=24)	*U*	*p*
	Mean Rank			
Health and Functionality (HF)	58.04	42.13	711.000	0.02
Social and Economic (SE)	56.28	48.27	858.500	0.26
Psychological and Spiritual (PS)	58.74	39.65	651.500	0.008
Family (F)	57.63	43.54	745.000	0.04
Overall Quality of Life (QLI)	58.59	40.19	664.500	0.01

Note: DF=1;106

Analysis of the table above show that there are significant differences between men and women in the sample relative to their perception of "Health and Functionality," "Psychological and Spiritual" life, "Family" life, and even their perception of "Overall QOL," with higher mean rank values for the former. It is worth noting that this difference is greatest for the "Psychological and Spiritual" subscale.

b. Age and schooling

The results indicate that there is a weak positive, but significant correlation (r=0.20; p=0.04) between age and the "Family" subscale, indicating that older people have greater satisfaction with family.

Conversely, there is a weak negative but significant correlation between education and the "Psychological and Spiritual" subscale (r=-0.22, p=0.02), implying that the higher the level of schooling, the less satisfied participants are with these dimensions of their lives life.

c. Employment status

The difference between the means of the groups, according to their employment status, was significant for the "Family" subscale (*F=3.25; p*=0.02), for the "Social and Economic" subscale (*F=17.91; p* =0.000) and for "Overall QOL" (*F=4.32; p*=0.006). According to the *post hoc Scheffe test* assessment of the "Overall QOL," the differences are between the group of *"unemployed and retired*" respondents and the group of *"employed fulltime*" respondents, with the former being lower than the latter.

d. Cohabitation

Cohabitation was also shown to interfere with the way the drug dependent individuals perceive their QOL. Statistically significant differences were found in all of the subscales: "Health and Functionality" (*F=3.09; p*=0.03), "Social and Economic" (*F=4.94; p*=0.003), "Psychological and Spiritual" (*F=3.12; p*=0.02), "Family" (*F=3.87; p*=0.01), and "Overall QOL" (*F=5.35; p*=0.002). As regards the assessment of the "Overall QOL," the *post hoc* located the differences between the groups of "*immediate family*" and "*alone*" respondents, being more unfavourable for the latter.

Health and Treatment Variables:

a. *Age consumption was initiated, duration of sobriety (after starting treatment), number of withdrawal symptoms reported by participants under treatment and number of withdrawal treatments performed previously.*

As previously mentioned (in characterizing the sample), the participants initiated consumption very early (M=18; SD=7.1) and for the majority (n=61; 56%), this was a new attempt at treatment. Thus, we wanted to see if the age consumption was initiated and the number of treatments previously undergone had any influence on their perception of QOL.
We also tried to apprehend how long they had been sober and which withdrawal symptoms stood, such out as myalgia, sweating, insomnia and vomiting, among others.

Table 2 - Correlation between the duration of sobriety and the number of previous withdrawal of treatment with the subscales and overall QLI scale

Subscales/Overall Scale	Duration of Sobriety (months) r (p)	Previous Withdrawal Treatments r (p)
Health and Functionality (HF)	0.20 (0.03)	-0.18 (0.05)
Social and Economic (SE)	0.18 (0.05)	-0.19 (0.04)
Psychological and Spiritual (PS)	0.20 (0.04)	-0.16 (0.08)
Family (F)	0.07 (0.41)	-0.21 (0.03)
Overall Quality of Life (QLI)	0.22 (0.02)	-0.23 (0.01)

The age at which consumption was initiated and withdrawal symptoms showed no statistically significant correlations in any of the subscales or the overall scale.
However, the duration of sobriety has a weak positive, but significant correlation, indicating that as the duration of sobriety increases, the score of the perception of "Overall QOL," "Health and Functionality," and "Psychological and Spiritual" increases.
The number of treatments previously undergone also seems to have a negative influence on the perception of satisfaction with "Social and Economic" life, "Family" life and "Overall QOL."

b. Situation regarding consumption

We know that despite the data being collected during withdrawal treatment, not all of the participants in this study were sober. Thus, we were curious to see if their situation regarding consumption interfered in how they evaluated their QOL. For this, we created a variable with three categories: *"sober"* (n=51), *"Sporadic consumption (less than once a month)*" (n=25), and *"daily consumption"* (n=32).
The results indicated a statistically significant difference between the groups for the subscales "Health and Functionality" (F=5.59; p=0.005), "Psychological and Spiritual" (F=7.69; p=0.001) and "Overall QOL" (F=7.74; p=0.001), with a difference located in this last variable between the groups, "*sober*" and "*daily consumption*," being more unfavourable for the latter.

4. DISCUSSION

The participants in this study reflect a national reality of people with high levels of dependence on alcohol and other drugs, often in terms of poly-consumption, that endures over several years and with multiple withdrawal treatments that prove to be ineffective.
Alcohol remains the drug of choice, consumed alone or in combination with others. This could be because it is associated with social acceptance and is considered to be a factor of social participation and interaction (Lomba et al., 2011).
This study demonstrated that more than half of the participants (53%) maintained high levels of consumption of alcohol and other drugs, which indicates a low adherence to treatment. We were also able to apprehend that most participants had already undergone more than one withdrawal treatment, undermining their self-efficacy, their belief in internal locus of control required to resolve the situation, and their volition for new treatments (Moreira et al., 2013).
The study results led us to realize that these people began consumption, particularly of alcohol, very early, in childhood or adolescence. These results are in line with the literature describing early consumption, progressively and concomitantly associated with other drugs (Silveira, Santos & Pereira, 2014). Alcohol use also seems to be associated with emotional issues, including negative emotional states and intra- and interpersonal conflicts, as well as certain cultural factors (APA, 2014).
The assessment of the perception this study's participants regarding their QOL based on the QLI was very positive overall. It is worth noting, however, that the social and economic component was the one that showed less satisfaction, which was expected, considering the group characteristics. They are mainly unemployed and their livelihood was based on unemployment benefits or social welfare income. These results are consistent with those found by Seabra, Amendoeira and Sá (2013) with a

similar population. However, in this study the results should be interpreted with some caution since the instrument is not specific for the population studied.

On the other hand, some longitudinal studies indicate that perception of QOL improves over time, especially between three and six months after treatment, decelerating later (Tran et al., 2012). This may be an aspect that at least partly explains this study's results since the sample is composed of 28 individuals (26%) who had been sober for less than six months and 23 (21%) for more than six months. Nevertheless, the number of participants who maintained consumption was very high, which undercuts this explanation.

The results of this study also indicated that their perception of QOL was independent of the drug(s) consumed. This finding may be related to the fact that QOL is an individual, multidimensional concept, highly determined not only by physiological factors, but also by psychosocial factors. Although there are drugs with different effects, the process of addiction, tolerance and *craving* is in essence very similar, which may have determined the effects found.

Women have a lower perception of QOL than men do in virtually all areas of the QLI. These results are concordant with Domingo-Salvany et al. (2010) with young heroin addicts, who were not followed in a withdrawal treatment. In contrast, this research obtained conflicting results with the previous study concerning the education variable. While in that study, schooling favours a better perception of QOL, in our study it is harmful, particularly its psychological and spiritual component. However, the results of other studies (Becker, Curry & Yang, 2011; Domingo-Salvany et al., 2010) correspond with this one, with regard to the participants' occupation and cohabitation, with the unemployed, pensioners, and those who live alone, presenting a worse perception of QOL.

The results also indicated that the duration of sobriety after treatment favours a better assessment of QOL, particularly in terms of functionality, and the psychological and spiritual component, which is in accordance with a set of studies conducted in this area (Maeyer, Vanderplasschen, & Broekaert, 2010; Tracy *et al.*, 2012; Tran *et al.*, 2012).

Neither the age of initiating consumption nor withdrawal symptoms showed any influence on the perception of QOL. However, the study conducted by Domingo-Salvany et al. (2010) found that the length of time of heroin use, as well as poly-consumption were unfavourable factors for the perception of health and QOL.

Moreover, people who were sober had a more positive perception of their QOL compared to individuals who did not properly managing their therapeutic process and maintained daily consumption of alcohol and/or drugs. Together, the sample exhibited a set of comorbidities, which have been shown in various studies, as conditioning factors for a worse perception of QOL (Tran et al., 2012).

CONCLUSIONS

The profile of people dependent on psychoactive substances recognized in this study, knowledge about how these people evaluate their QOL, and the factors that might influence this perception can determine a change in the current position vis-à-vis the intervention models regarding dependency.

Based on the study results, we can assume that younger women, with a higher level of education, living alone and unemployed or retired, and with a history of withdrawal treatments, have a more vulnerable profile when living with drug addiction. QOL has been recognized as a measurement of important outcomes for decision-making in terms of resources and the creation of specific intervention models.

The results of this study suggest planning a set of systematic and individualized interventions parallel to the standard treatment, including an exercise programme, which has shown positive results (Giesen, Zimmer & Bloch, 2016).

The health intervention within the issue of addiction must focus on patients in their troubled lives rather than on the disease itself, trying to develop holistic and suitable health care management. Providing an answer to the issue and promoting empowerment requires a reorientation of the actions of health professionals. For this, we need to assess the changing requirements and tailor the intervention, supported always by scientific evidence.

It is also up to the community at large to help these people by providing the means to facilitate the complex transition they are experiencing, considering dependence as a chronic disease and not just as an "addiction". For their part, these people have the responsibility to make decisions and adhere to the therapeutic indications.

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A PERCEÇÃO DA QUALIDADE DE VIDA EM PESSOAS COM DEPENDÊNCIA DE DROGAS

PERCEPTION OF QUALITY OF LIFE OF PEOPLE WITH DRUG ADDICTION

LA PERCEPCIÓN DE LA CALIDAD DE VIDA DE LAS PERSONAS CON ADICCIÓN A LAS DROGAS

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RESUMO

Introdução: A toxicodependência afeta a vida de muitas pessoas e os dados estatísticos demonstram a abrangência do problema, que se inicia, geralmente, em idades precoces e que se mantém ao longo da vida, com implicações na sua saúde e qualidade de vida (QV).

Objetivos: Avaliar a perceção de QV das pessoas com problemáticas aditivas; comparar a perceção de QV entre os dependentes de drogas ilícitas e os dependentes de álcool; e avaliar se existem diferenças relativamente à perceção de QV, considerando as variáveis sociodemográficas, de saúde e de tratamento.

Métodos: Desenvolveu-se um estudo quantitativo, descritivo e transversal com uma amostra de 108 pessoas, maioritariamente do sexo masculino, com idade média de 45 anos e baixa escolaridade, com um longo historial de consumo de substâncias, especialmente em policonsumos, com início em idades muito precoces e em tratamento de desabituação no Distrito do Porto. Para avaliar a perceção de QV foi utilizado o Quality of Life Índex (QLI) versão portuguesa de Ferrans & Powers.

Resultados: Os participantes percecionaram a sua QV como positiva, não ficando demonstradas diferenças nessa perceção, considerando o tipo de dependência química (drogas ilícitas/álcool); os participantes do sexo feminino (p=0,01), não ativos (p=0,006), que viviam sozinhos (p=0,002), com tratamentos de desabituação anteriores (p=0,01), e que mantinham consumos (p=0,001), apresentaram valores inferiores nos scores do QLI global.

Conclusões: Este estudo permitiu avaliar a perceção de QV das pessoas com dependencia de drogas, e identificar grupos com maior vulnerabilidade, com vista ao planeamento de programas de intervenção mais efetivos.

Palavras-chave: Transtornos relacionados ao uso de substâncias; Alcoolismo; Qualidade de vida

ABSTRACT

Introduction: Drug addiction affects many people's lives and statistical data demonstrate the extent of the problem, which usually begins at an early age and is maintained throughout life, with implications for health and quality of life (QOL).

Objectives: To evaluate the perception of QOL of people with addictive problems; to compare the perception of QOL between the dependents of illicit drugs and alcohol; to evaluate the differences between the perception of QOL in terms of sociodemographic, health and treatment variables.

Methods: A quantitative, descriptive and cross-sectional study was carried out with a sample of 108 people, mostly males, with a mean age of 45 years and low schooling, with a long history of substance use, especially in poly-consumption, beginning on early ages and undergoing treatment in the District of Porto. To evaluate the perception of QOL, the Quality of Life Index (QLI), Portuguese version, by Ferrans & Powers was used.

Results: Participants perceived their QOL as positive, with no differences according the type of chemical dependence (illicit drugs/alcohol); Female participants (p=0.01), non-active (p=0.006), who lived alone (p=0.002), had previous treatments (p=0.01), and who continued to consume (p=0.001) presented lower values in the global QLI scores.

Conclusions: The aim of this study was to evaluate the perception of QOL of people with drug dependence, and to identify groups with greater vulnerability, in order to plan more effective intervention programmes.

Keywords: Substance-related disorders; Alcoholism; Quality of life

RESUMEN

Introducción: La toxicomanía afecta la vida de muchas personas y los datos estadísticos demuestran el alcance del problema, que se inicia generalmente en edades tempranas y que se mantiene a lo largo de la vida, con implicaciones en su salud e calidad de vida (QV).

Objetivos: Evaluar la percepción de QV de las personas con problemáticas aditivas; comparar la percepción de QV entre los dependientes de drogas ilícitas y los dependientes de alcohol; y evaluar si existen diferencias en la percepción de QV, considerando las variables sociodemográficas, de salud y de tratamiento.

Métodos: Se desarrolló un estudio cuantitativo, descriptivo y transversal con una muestra de 108 personas, mayoritariamente del sexo masculino, con edad media de 45 años y baja escolaridad, con un largo historial de consumo de sustancias, especialmente en policonsumos, con inicio en edad muy temprana y en tratamiento de deshabituación en el Distrito de Oporto. Para evaluar la percepción de QV se utilizó el Quality of Life Index (QLI), versión en portugués, de Ferrans & Powers.

Resultados: Los participantes percibieron su QV como positiva. Esta percepción no mostró diferencias significativas, considerando el tipo de dependencia química (drogas ilícitas / alcohol). Los participantes del sexo femenino (p=0,01), no activos (p=0,006), que vivían solos (p=0,002), con tratamientos de deshabituación anteriores (p=0,01), y que mantenían consumos (p=0,001), presentaron valores inferiores en las puntuaciones del QLI global.

Conclusións: Este estudio permitió evaluar la percepción de QV de las personas con dependencia de drogas, e identificar grupos con mayor vulnerabilidad, con vistas a la planificación de programas de intervención más efectivos.

Palabras Clave: Trastornos relacionados con sustancias; Alcoholismo; Calidad de vida

INTRODUÇÃO

A toxicodependência é um fenómeno atual e planetário que afeta a vida das pessoas, das suas famílias e da comunidade em geral. Os dados estatísticos mundiais demonstram a abrangência do problema, reconhecendo-a como uma doença crónica, que se inicia, em geral, em idades muito precoces e que se mantém ao longo de toda a vida (United Nations Office on Drugs and Crime, 2016). A compreensão sobre esta problemática, quer pela sua amplitude epidemiológica, como pela sua representatividade clínica, assume-se como uma necessidade incontornável na esfera dos programas de saúde dirigidos à toxicodependência (APA, 2014). A complexidade e amplitude desta problemática, embora realçada em diferentes contextos teóricos e práticos, tem sido pouco investigada no nosso país.

Em paridade, a QV é reconhecida como uma medição de resultados importantes no sentido das tomadas de decisão respeitantes aos recursos e à criação de programas específicos de intervenção em saúde, nomeadamente em saúde mental (Tran *et al.*, 2012). Os profissionais de saúde que cuidam de pessoas com dependências de substâncias, estão cada vez mais conscientes da necessidade de entender melhor a perceção individual sobre o estado de saúde e QV dos dependentes de drogas.

Neste sentido, o presente estudo de investigação tem como objetivos, avaliar a perceção de QV das pessoas com problemáticas aditivas; comparar a perceção de QV entre os participantes dependentes de drogas ilícitas e os dependentes de álcool; e avaliar se existem diferenças relativamente à perceção de QV, considerando as variáveis sociodemográficas, de saúde e de tratamento, tendo como finalidade desenhar uma intervenção em saúde mais dirigida às reais necessidades dessa população.

1. ENQUADRAMENTO TEÓRICO

Os conceitos vigentes sobre as bases biológicas da utilização abusiva de álcool e outras drogas alteraram-se profundamente nos últimos anos (United Nations Office on Drugs and Crime, 2016; WHO, 2014). Os recentes avanços nos campos da genética, biologia molecular, neurofarmacologia comportamental e imagiologia cerebral têm alterado drasticamente o nosso entendimento sobre o processo de dependência e recaída. A dependência é, há já vários anos, reconhecida como uma doença crónica que envolve interações complexas entre a exposição repetida a drogas, os fatores biológicos e os fatores ambientais (APA, 2014).

Os dados constantes do World Drug Report indicam que um em cada 20 adultos usaram, pelo menos, uma droga ilícita em 2014 (United Nations Office on Drugs and Crime, 2016). No que se refere ao uso abusivo de álcool, pensa-se que, em todo o mundo, indivíduos com 15 ou mais anos de idade consumiram cerca de 6,2 litros de álcool puro em 2010 (WHO, 2014). Estes estudos indicam ainda que, cerca de 29 milhões de pessoas em todo o mundo que consomem drogas, sofrem de comorbilidades associadas, enfatizando assim as suas consequências para a saúde (Teoh, Yee, & Habil, 2016; United Nations Office on Drugs and Crime, 2016). No mesmo sentido, a Organização Mundial de Saúde identifica o uso abusivo de álcool como causa primária para mais de 200 patologias descritas no ICD-10 (WHO, 2014).

Na União Europeia, e especificamente em Portugal, o consumo de álcool é elevado, sendo que, em 2010, os portugueses com 15 ou mais anos consumiram uma média anual de 12,9 litros de álcool puro por ano (consumo de álcool per capita), com implicações a nível familiar, social e na saúde (WHO, 2014). No que se refere aos dados de mortalidade, o número de mortes por drogas em Portugal foi, apenas no ano 2015, de onze pessoas, com uma média de 48,5 anos de idade, e por abuso de álcool, no mesmo ano, foi de 84 pessoas, com uma média de idades de 67,2 anos (INE, 2017).

A uma progressiva dependência física e psicológica, associa-se uma necessidade obsessiva e coerciva de procura da droga que converge numa deterioração do autoconceito e da relação com a sociedade, com perda de laços afetivos e a um conjunto de comportamentos antissociais, como o roubo, a agressividade ou a prostituição (APA, 2014).

O tratamento das dependências exige, em geral, não só uma intervenção de longo prazo, mas também uma abordagem multifacetada e multiprofissional. Além disso, porque a dependência de drogas começa geralmente na adolescência ou no início da idade adulta e é frequente a sua comorbidade com a doença mental, precisamos de expandir as nossas intervenções de tratamento nessa faixa etária, tanto para o abuso de substâncias, como para a doença psiquiátrica (Silveira, Santos, & Pereira, 2014).

Identificar as necessidades de saúde de uma população que requer intervenção é o primeiro passo para uma intervenção ajustada e eficiente (Rocha et al., 2013). Neste sentido, o interesse na avaliação da QV tem crescido muito substancialmente nos últimos anos, embora ainda exista um número reduzido de estudos que avaliem a QV em pessoas consumidoras de drogas e em particular, que utilizem esse conceito na avaliação da eficácia das intervenções realizadas em saúde (Maeyer, Vanderplasschen, & Broekaert, 2010; Moreira *et al*., 2013). Os mesmos autores consideram ainda que a análise dessa dimensão na toxicodependência é de particular relevância, dada a reconhecida perturbação que as drogas acarretam para a vida dos seus consumidores, a nível físico, emocional e social.

Os principais fatores descritos como podendo influenciar a perceção de QV são os fatores sociodemográficos (como o sexo, a idade e o estado civil), o nível educacional, socioeconómico e a raça (Moreira *et al.,* 2013).

A avaliação da QV fornece informação pertinente sobre a forma como a pessoa integrou as mudanças secundárias à sua doença e tratamento no seu dia-a-dia, proporcionando conhecimento sobre o processo de transição ao longo do tempo (Meleis, 2007).
A presente investigação foi desenvolvida tendo por base a relevância da temática, ao que se associou a necessidade de melhor identificar as situações de maior vulnerabilidade entre a população estudada, tendo como finalidade desenhar uma intervenção em saúde mais dirigida às reais necessidades dessa população.

2. MÉTODOS

O presente estudo inscreve-se no paradigma quantitativo, com um perfil descritivo e transversal, incluindo um amostra global de 108 participantes.

2.1 Amostra

O método de amostragem utilizado foi de tipo não probabilístico e de conveniência, tendo como critérios de inclusão no estudo: serem dependentes de substâncias psicoativas, consideradas como ilícitas ou dependentes de álcool; conscientes e orientados auto e alopsiquicamente; que se encontrassem em tratamento em unidades de saúde do Distrito do Porto; e que aceitassem participar voluntariamente no estudo.
A amostra incluiu 84 pessoas do sexo masculino (78%) e 24 do sexo feminino (22%), com uma média de 45 anos de idade (Mn=22 e Mx=79 anos; dp=10,6), com baixa escolaridade (M=7 anos de escolaridade; dp= 3,39) e na sua maioria desempregada (n=62; 57%). Grande parte dos participantes residiam no Distrito do Porto e em família restrita (n=38; 35%), embora 20% da amostra vivesse sozinha. No que diz respeito à saúde, devemos salientar que, apesar de todos se encontrarem a realizar tratamento de desabituação, apenas 51 (47%) participantes referiram encontrar-se abstinentes. As drogas consumidas eram diversas, incluindo o abuso do álcool isoladamente (n=20; 19%) ou associado a outras drogas, como a heroína, a cocaína ou o cannabis (n=17; 16%), com quantidades de consumo e vias de administração variáveis.
Apenas 44% da amostra se encontrava a realizar o primeiro tratamento (n=47), pois para a maioria, este tratava-se já de uma nova tentativa de desabituação.
Relativamente à idade de início dos consumos, os participantes da amostra situaram-se entre um mínimo de 3 e um máximo de 45 anos de idade, com uma média de 18 anos de idade (dp=7,1). No entanto, foi possível percebermos que foi para o álcool, que se destacou um início de consumos muito precoce, com 18 participantes a iniciarem os consumos antes dos 10 anos de idade.
Cerca de 76% da amostra (n=82) referiu ainda ter outras doenças associadas à dependência, sendo as mais comuns as de foro digestivo (n=20; 19%), a hepatite C (n=11; 10%) e as doenças de foro respiratório (n=10; 9%).

2.2 Instrumentos de recolha de dados e procedimentos

Para a recolha da informação foram utilizados os seguintes instrumentos:
a. Formulário de caracterização sociodemográfica, de saúde e de tratamento, por nós construído, incluindo um conjunto de questões estruturadas e semi-estruturadas;
b. *Quality of Life Índex (QLI)* de Ferrans e Powers (Ferrans, 2005; Ferrans & Powers, 2011). Instrumento desenvolvido com o objetivo de avaliar a QV, tanto das pessoas saudáveis como doentes. Está traduzido e adaptado para cerca de 20 idiomas diferentes, entre eles o Português. A sua versão genérica III foi adaptada para a cultura brasileira por Kimura e Silva (2009) e para a portuguesa num estudo com doentes de transplante renal desenvolvido por Pinto (1998).
O QLI é composto por quatro subscalas: Saúde e Funcionalidade (SF) com 13 itens; Social e Económica (SE) com 8 itens; Psicológica e Espiritual (PE) com 7 itens e Familiar (F) com 5 itens. Apresenta ainda uma medida global da QV (QLI Global). A escala inclui 33 itens referentes à *Satisfação* e 33 à *Importância*, sendo a resposta dada numa escala tipo likert com seis pontos, em que o valor 1 corresponde a "muito insatisfeito" e "sem nenhuma importância" e o valor 6 a "muito satisfeito" e "muito importante".
O procedimento de cotação do QLI requer, em primeiro lugar, a recodificação dos itens referentes à *Satisfação,* com a finalidade de centralizar o zero da escala. Isto é obtido subtraindo-se o valor 3,5 das respostas a cada item da *Satisfação*, resultando em pontuações de -2,5; -1,5; -0,5; +0,5; +1,5 e + 2.5, para as pontuações iniciais de 1 a 6, respetivamente. Em seguida, os scores recodificados de *Satisfação* são ponderados com os da *Importância*, multiplicando-se o valor recodificado de cada item com o valor bruto da resposta obtida na Importância (1 a 6). Em seguida, o score total do QLI é calculado através da soma de todos os itens ponderados respondidos e dividindo pelo total de itens respondidos. A variação possível neste ponto, vai de -15 a +15. No sentido de eliminar ponderações negativas no score final, soma-se 15 aos valores obtidos, resultando um score total do instrumento que pode variar entre 0 e 30.
O procedimento a realizar para o cálculo das diferentes subscalas é similar, apenas considerando o total de itens do domínio em questão.
O instrumento, as instruções para a sua cotação e os itens que compõem cada subscala encontra-se disponível na internet (https://qli.org.uic.edu/questionaires/pdf/genericversionIII).

Os resultados são apresentados em scores que variam entre 0 e 30, em que valores mais elevados correspondem a maior "*Satisfação/Importância*", não tendo sido definidos pontos de corte (Kimura e Silva, 2009).
Apesar do QLI genérico - versão III ainda não ter sido validado, de forma consistente, para a população em estudo, o que implica uma análise ponderada dos resultados que aqui serão apresentados, os valores dos coeficientes *alfa de cronbach* das diferentes subscalas apresentaram, no presente estudo, valores aceitáveis (entre 0,60 e 0,80), especialmente tendo em conta o número reduzido de itens em algumas subscalas (Pais-Ribeiro, 2010). O valor da fidelidade da escala global foi também aceitável (0,87), e em consonância com os valores de outros estudos (Ferrans & Powers, 2011; Kimura e Silva, 2009; Pinto, 1998).
No sentido de procedermos à recolha de dados, os potenciais participantes na amostra foram indicados por um técnico de saúde e contactados pelo investigador principal, após a consulta médica. Depois de confirmado o cumprimento dos critérios de inclusão definidos, foram encaminhados para um gabinete e informados sobre os objetivos do estudo, o seu grau de confidencialidade e solicitado o seu consentimento para nele participarem. O instrumento de recolha de dados foi então preenchido individualmente ou, em caso de dificuldades, aplicado sob a forma de formulário pelo investigador principal. Foram tidos em conta todos os procedimentos descritos na Declaração de Helsínquia, nomeadamente solicitando a devida autorização à autora do instrumento, bem como às unidades de saúde.
Com vista à análise dos dados foi criada uma base de dados no programa estatístico SPSS, versão 22, e realizada uma análise descritiva e inferencial, considerando a significância mínima de $p<0,05$. Apesar de não ter sido confirmada a normalidade da distribuição dos dados em todas as variáveis, decidimos pela utilização da estatística paramétrica na generalidade da análise, considerando que a amostra tem $N>30$.

3. RESULTADOS

No sentido de respondermos ao objetivo 1, realizámos a análise relativa à perceção de QV da amostra, avaliada através do QLI em cada uma das suas subscalas e na escala global, obtendo-se os resultados que se apresentam no Gráfico 1.

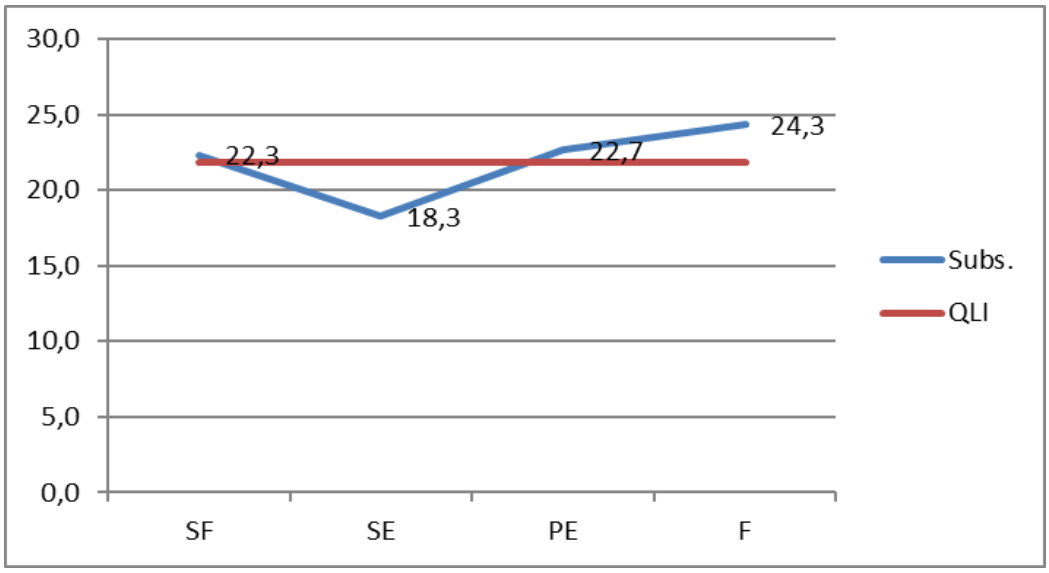

Gráfico 1. Média do score da perceção de QV nas diferentes subscalas e escala global das pessoas com dependência de drogas
SF-Saúde e Funcionalidade; SE-Social e Económica; PE-Psicológica e Espiritual; F-Familiar; Subs. – subscalas QLI

A análise do gráfico anterior permite-nos concluir que os participantes da amostra avaliam a sua QV como positiva (considerando o score 0-30), quer globalmente, quer em cada uma das componentes avaliadas. A média do score mais elevada situa-se na subscala "Familiar" (*M=24,3; dp=4,49*) e o valor inferior na subscala "Social e Económica" (*M=18,3; dp=4,37*).
Para responder ao objetivo 2, e comparamos a perceção de QV dos indivíduos com dependência de drogas consideradas ilícitas e do álcool, recodificamos a variável "*Drogas que consumiu anteriormente ao tratamento*" numa variável com três categorias: "*dependência de álcool*" (n=37); "*dependência de outras drogas*" (n=30); e "*dependência de álcool + outras drogas*" (n=41).
Através do teste *F da OneWay ANOVA,* foi possível perceber que não existiam diferenças estatisticamente significativa entre os três grupos, nem na escala global do QLI (F=2,24; p=0,11), nem em nenhuma das subscalas: SF (F=1,21; p=0,30); SE (F=2,82; p=0,06); PE (F=1,91; p=0,15)SF (F=1,34; p=0,26).

Finalmente, e para responder ao objetivo 3, realizámos a análise relativa à perceção de QV da amostra, considerando as variáveis sociodemográficas, de saúde e de tratamento, recorrendo aos testes de comparação de médias (teste *U de Mann Witney* e teste F da ANOVA) e à correlação *r de Pearson.*
Para facilitar a leitura dos resultados, a apresentação far-se-á de acordo com as variáveis em análise.

Variáveis Sociodemográficas:

a. Sexo

Tabela 1 – Comparação de médias entre os sexos nas subescalas e escala global do QLI

Subscalas/Escala Global	Masculino (n=84)	Feminino (n=24)	*U*	*p*
	Mean Rank			
Saúde e Funcionalidade (SF)	58,04	42,13	711,000	0,02
Social e Económica (SE)	56,28	48,27	858,500	0,26
Psicológica e Espiritual (PE)	58,74	39,65	651,500	0,008
Familiar (F)	57,63	43,54	745,000	0,04
Qualidade de Vida Global (QLI)	58,59	40,19	664,500	0,01

Nota: GL=1;106

A análise do quadro anterior permite-nos concluir que existem diferenças estatisticamente significativas entre os homens e as mulheres que compõem a amostra, relativamente à perceção sobre a sua "Saúde e Funcionalidade", vida "Psicológica e Espiritual", vida "Familiar", e ainda a perceção de "QV Global", com médias de *rank* superiores nos primeiros. De salientar que esta diferença é maior na subscala "Psicológica e Espiritual".

b. Idade e escolaridade
Os resultados permitem-nos concluir que a idade se correlaciona, de forma positiva, fraca mas significativa (*r=0,20; p=0,04*) com a subscala "Familiar", indicando que as pessoas mais velhas apresentam maior satisfação com a família.
Em sentido oposto, a escolaridade correlaciona-se de forma negativa, fraca, mas significativa, com a subscala "Psicológica e Espiritual" (*r=-0,22; p=0,02*), indicando que quanto maior é o grau de escolaridade, menos satisfeitos os participantes se apresentam com estas dimensões da sua vida.

c. Situação profissional
A diferença entre as médias dos grupos, de acordo com a situação profissional, mostrou-se significativa para a subscala "Familiar" (*F=3,25; p=0,02*), para a subscala "Social e Económica" (*F=17,91; p=0,000*) e ainda para a "QV Global" (*F=4,32; p=0,006*). De acordo com o *post hoc teste de scheffe,* na avaliação da "QV Global", as diferenças situam-se entre o grupo dos "*desempregados e reformados*" e o grupo dos "*empregados a tempo total*", com prejuízo para os primeiros.

d. Coabitação
Também a coabitação mostrou interferir na forma como a pessoa dependente de drogas perceciona a sua QV, sendo as diferenças estatisticamente significativas encontradas nas subscalas "Saúde e Funcionalidade" (*F=3,09; p=0,03*); "Social e Económica" (*F=4,94; p=0,003*); "Psicológica e Espiritual" (*F=3,12; p=0,02*); "Familiar" (*F=3,87; p=0,01*); e para a "QV Global" (*F=5,35; p=0,002*). O *post hoc,* no que se refere à avaliação da "QV Global", situa as diferenças entre os grupos de "*família restrita*" e "*sozinho*", mais desfavorável para os últimos.

Variáveis de Saúde e de Tratamento:

a. *Idade de início dos consumos, tempo de abstinência (após início do tratamento), número de sintomas de privação referidos pelos participantes em situação de tratamento, e número de tratamentos de desabituação realizados anteriormente.*

Como já referido anteriormente (na caracterização da amostra), os participantes da amostra iniciaram consumos muito precocemente na sua vida (M=18 anos; dp=7,1) e, para a maioria (n=61; 56%), este constituía uma nova tentativa de tratamento. Neste sentido, pretendemos perceber se a idade de início dos consumos e o número de tratamentos realizados anteriormente interferiam, de alguma forma, na sua perceção de QV.
Tentamos ainda perceber há quanto tempo se encontravam em abstinência e os sintomas de privação que destacavam, como mialgias, sudorese, insónias ou vómitos, entre outros.

Tabela 2 – Correlação entre o tempo de abstinência e o número de tratamento de desabituação anteriores com as subescalas e escala global do QLI

Subscalas/Escala Global	**Tempo de abstinência (em meses)** r (p)	**Tratamentos de desabituação anteriores** r (p)
Saúde e Funcionalidade (SF)	0,20 (0,03)	-0,18 (0,05)
Social e Económica (SE)	0,18 (0,05)	-0,19 (0,04)
Psicológica e Espiritual (PE)	0,20 (0,04)	-0,16 (0,08)
Familiar (F)	0,07 (0,41)	-0,21 (0,03)
Qualidade de Vida Global (QLI)	0,22 (0,02)	-0,23 (0,01)

A idade de início dos consumos e os sintomas de privação não apresentaram correlações com significado estatístico em qualquer uma das subscalas ou na escala global.
Em contrapartida, o tempo de abstinência apresenta uma correlação positiva, fraca mas significativa, indicando que à medida que aumenta o tempo de abstinência, vai aumentando o score de perceção de ""QV Global", de "Saúde e Funcionalidade", e "Psicológica e Espiritual".
O número de tratamentos já anteriormente realizados parece também influenciar, de forma negativa, a perceção relativa à satisfação com a vida "Social e Económica", com a vida "Familiar" e com a "QV Global".

b. Situação relativa aos consumos

Sabemos que apesar da recolha de dados ser realizada em contexto de tratamento de desabituação, nem todos os participantes do presente estudo se encontravam abstinentes. Assim, tivemos curiosidade de perceber se a sua situação em relação aos consumos, interferia na forma como os mesmos avaliavam a sua QV. Para tal, criamos uma variável com três categorias: "*abstinente*" (n=51); "*consumos esporádicos (menos de uma vez por mês)*" (n= 25) e "*consumos diários*" (n=32).
Os resultados indicaram uma diferença estatisticamente significativa entre os grupos em análise, nas subscalas "Saúde e Funcionalidade" (F=5,59; p=0,005), "Psicológica e Espiritual" (F=7,69; p=0,001) e para a "QV Global" (F=7,74; p=0,001), com uma diferença localizada nesta última variável, entre os grupos "*abstinente*" e de "*consumos diários*", desfavorável para o último.

4. DISCUSSÃO

Os participantes do presente estudo espelham uma realidade nacional de pessoas com elevados níveis de dependência de álcool e de outras drogas, muitas vezes em policonsumos, que se arrastam ao longo de vários anos e com múltiplos tratamentos de desabituação que se mostraram ineficazes.
O álcool continua a ser a droga de eleição, consumida de forma isolada ou em associação a outras, facto que poderá estar associado à sua aceitação social e por ser considerada como um fator de partilha e de convívio social (Lomba *et al.*, 2011).
O presente estudo demonstrou que mais de metade dos participantes (53%) mantinha consumos elevados de álcool e de outras drogas, o que indica uma baixa adesão ao tratamento que estava a ser instituído. Também percebemos que a maioria dos participantes tinha já realizado mais de um tratamento de desabituação, o que contribui para uma diminuição da sua autoeficácia, crença no locus de controlo interno necessário para resolver a situação e volição necessária para novos tratamentos (Moreira *et al*., 2013).
Percebemos, com base nos resultados do presente estudo, que estas pessoas iniciaram consumos muito precocemente, nomeadamente na infância ou na adolescência, em especial no álcool. Estes resultados vão de encontro à literatura que descreve um início de consumos precoce, com a associação progressiva e concomitante de outras drogas (Silveira, Santos, & Pereira, 2014). A utilização de álcool parece também estar associada a questões afetivas, nomeadamente estados emocionais negativos e conflitos intra e interpessoais, bem como a alguns fatores de cariz cultural (APA, 2014).
A avaliação relativa à perceção que os participantes no presente estudo detinham relativamente à sua QV com base no QLI foi, na sua globalidade, muito positiva. De notar, no entanto, que a componente social e económica foi a que demonstrou uma

menor satisfação, o que era expectável, considerando as características do grupo, essencialmente desempregado, cuja subsistência se fundava no subsídio de desemprego ou no rendimento social de inserção. Estes resultados vão ao encontro dos encontrados por Seabra, Amendoeira e Sá (2013) numa população similar, embora, no presente estudo, devam ser interpretados com alguma cautela, considerando que o instrumento não é especifico para a população estudada.

Por outro lado, alguns estudos longitudinais indicam que a perceção de QV vai melhorando ao longo do tempo, nomeadamente entre os três e os seis meses após tratamento, desacelerando depois (Tran *et al.*, 2012). Este pode ser um aspeto que explique, pelo menos parcialmente, os resultados encontrados no presente estudo, uma vez que a amostra é composta por 28 indivíduos (26%) que se encontravam em abstinência por um período inferior a seis meses e 23 (21%) há mais de seis meses. No entanto, o número de participantes que mantinham consumos era muito elevado, o que não joga a favor desta explicação.

Os resultados do presente estudo indicaram ainda que a sua perceção de QV era independente da/s droga/s consumidas. Esta constatação poderá estar associada ao facto da QV ser um conceito individual e multidimensional, muito determinado por fatores fisiológicos, mas também os psicossociais. Apesar de serem drogas com efeitos diferentes, o processo de dependência, tolerância e *craving* é, na sua essência, muito similar, o que pode ter determinado os efeitos encontrados.

As mulheres apresentavam uma perceção de QV inferior à dos homens em praticamente todos os domínios do QLI, resultados concordantes com os de Domingo-Salvany *et al.* (2010) com jovens heroinodependentes, não seguidos em tratamento de desabituação. Em contrapartida, a presente investigação obteve resultados contraditórios com o estudo anterior, no que concerne à variável escolaridade, pois enquanto que nesse estudo, a escolaridade é favorecedora de uma melhor perceção de QV, no presente estudo ela é prejudicial, nomeadamente na sua componente psicológica e espiritual. No entanto, os resultados de alguns estudos (Becker, Curry & Yang, 2011; Domingo-Salvany *et al.*, 2010) são sobreponíveis com o presente, no que se refere à ocupação dos participantes e coabitação, tendo os desempregados, os reformados, e os que vivem sós, apresentado uma pior perceção de QV.

Os resultados indicaram ainda que o tempo de abstinência após o tratamento favorece uma melhor avaliação da QV, nomeadamente em termos de funcionalidade, e na componente psicológica e espiritual, o que está de acordo com um conjunto de estudos desenvolvidos nesta área (Maeyer, Vanderplasschen, & Broekaert, 2010; Tracy *et al.*, 2012; Tran *et al.*, 2012).

A idade de início dos consumos, bem como os sintomas de privação, não mostrou qualquer influência sobre a perceção de QV. Em contrapartida, o estudo desenvolvido por Domingo-Salvany *et al.* (2010), encontrou que o tempo de utilização da heroína, bem como os policonsumos, eram fatores desfavorecedores da perceção de saúde e QV.

Também as pessoas que se encontravam abstinentes, apresentavam uma perceção mais positiva sobre a sua QV, em comparação com os indivíduos que não estavam a gerir adequadamente o seu processo terapêutico e mantinham consumos diários de álcool e/ou drogas. Em associação, a amostra apresentou um conjunto de comorbilidades, que se mostraram, em diferentes estudos, como fatores condicionadores de uma pior perceção de QV (Tran *et al.*, 2012).

CONCLUSÕES

O perfil da pessoa dependente de substâncias psicoativas reconhecido no presente estudo, o conhecimento sobre a forma como estas pessoas avaliam a sua QV, e ainda dos fatores que podem condicionar essa perceção, podem determinar uma alteração do posicionamento atual face aos modelos de intervenção na dependência.

Com base nos resultados do presente estudo, podemos presumir que as mulheres, mais jovens, com mais elevado nível de escolaridade, que vivem sozinhas e desempregadas ou reformadas, e com história de tratamentos de desabituação, configuram um perfil de maior vulnerabilidade na vivência com dependência de drogas. A QV tem sido reconhecida como uma medição de resultados importantes para as tomadas de decisão respeitantes aos recursos e para a criação de modelos de intervenção específicos.

Os resultados do presente estudo sugerem o planeamento de um conjunto de intervenções sistematizadas e individualizadas, paralelas ao tratamento protocolado, incluindo um programa de exercício físico, cuja evidência tem demonstrado resultados positivos (Giesen, Zimmer & Bloch, 2016).

A intervenção em saúde no âmbito da problemática da dependência deve centralizar-se no doente, na sua problemática de vida, mais do que na própria patologia, procurando desenvolver uma holística e adequada gestão dos cuidados de saúde. Oferecer uma resposta ao problema e promover o empowerment requer uma reorientação das ações dos profissionais de saúde, sendo para isso, necessário avaliar as exigências de mudança e adequar a intervenção, sempre apoiada na evidência científica.

Cabe também à comunidade em geral, ajudar estas pessoas, proporcionando-lhes meios facilitadores da complexa transição que vivenciam, considerando a dependência como uma doença crónica e não apenas como um "vício". Por seu lado, a estas pessoas cabe a responsabilidade de tomar decisões e aderir às indicações terapêuticas.

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SATISFAÇÃO DA PESSOA SURDA COM A QUALIDADE DA ASSISTÊNCIA EM SAÚDE

SATISFACTION OF DEAF PEOPLE WITH THE HEALTH CARE SYSTEM QUALITY

SATISFACCIÓN DE LA PERSONA SORDA CON LA CALIDAD DE LA ASISTENCIA SANITÁRIA

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RESUMO

Introdução: A barreira de comunicação existente entre as pessoas surdas e ouvintes prejudica a participação ativa da pessoa surda na sociedade.

Objetivo: Avaliar a satisfação da pessoa surda com a qualidade das ações e serviços oferecidos nas unidades de saúde públicas.

Métodos: Estudo de natureza exploratório-descritiva e enfoque transversal, realizado com uma amostra de 15 pessoas surdas com perda auditiva severa ou profunda, de ambos os sexos (10 homens e 5 mulheres), que se comunicam através da Língua de Sinais (Libras), com idade compreendida entre 20 e 38 anos, usuárias dos serviços públicos de saúde. Foi utilizado um Questionário de Satisfação.

Resultados: A maioria dos participantes (86,7%) declararam-se muito insatisfeitos com a comunicação dos funcionários, 80% referiram ausência de materiais informativos e educativos e 53,3% demonstram nível de satisfação negativo, quanto à pontualidade no agendamento das consultas, marcação e entrega de exames.

Conclusões: Os resultados mostram a necessidade de contratação de intérpretes para melhorar a assistência das pessoas surdas.

Palavras-chave: Surdez; Satisfação; Assistência; Saúde

ABSTRACT

Introduction: The communication barrier between deaf and hearing people harms the active participation of the deaf person in society.

Objective: To evaluate the satisfaction of the deaf person with the quality of the actions and services offered in public health units.

Methods: An exploratory, descriptive, cross-sectional study was carried out on a sample of 15 deaf people with severe or profound hearing loss, of both genders (10 men and 5 women), who communicate through Sign Language (Libras), aged between 20 and 38 years, who use public health services. A Satisfaction Questionnaire was used.

Results: Most participants (86.7%) were very dissatisfied with the level of communication of the employees, 80% reported lack of informative and educational materials and 53.3% showed a negative level of satisfaction regarding the timeliness of scheduling appointments and delivery of test results.

Conclusions: Results show the need to hire interpreters to improve care for deaf people.

Keywords: Deafness; Satisfaction; Assistance; Health

RESUMEN

Introducción: La barrera de comunicación existente entre las personas sordas y oyentes perjudica la participación activa de la persona sorda en la sociedad.

Objetivo: Evaluar la satisfacción de la persona sorda con la calidad de las acciones y servicios ofrecidos en las unidades de salud públicas.

Métodos: Estudio de carácter exploratorio-descriptivo y enfoque transversal, realizado con una muestra de 15 personas sordas con pérdida auditiva severa o profunda, de ambos sexos (10 hombres y 5 mujeres), que se comunican a través de la Lengua de Signos (Libras), Con edad compendida entre 20 y 38 años, usuarias de los servicios públicos de salud. Se utilizó un Cuestionario de Satisfacción.

Resultados: La mayoría de los participantes (86,7%) se declararon muy insatisfechos con la comunicación de los funcionarios, el 80% señaló ausencia de materiales informativos y educativos y el 53,3% demuestra un nivel de satisfacción negativa, en cuanto a la puntualidad en la programación de las directrices Consultas, marcado y entrega de exámenes.

Conclusións: Los resultados muestran la necesidad de contratación de intérpretes para mejorar la asistencia de las personas sordas.

Palabras Clave: Sordera; Satisfacción; Asistencia; Salud

INTRODUCTION

The understanding of deafness depends on the ideological conceptions acquired throughout History, and is directly related to the inclusion or non-inclusion of the subjects involved within the social environment of predominantly listeners. In the present research, two ideologies based on the work of McDonnell (2016) were acknowledged: the norm that consists in turning the Deaf individual into a listener or as oralized as possible in the listening society; and that of the Deaf and disability rights, that is, to make them socially inclusive through respect for social and cultural rights.

In this article, we chose to use the word "Deaf" with a capital letter, following the bibliographical line of the specialty that defends the definition of the word in the sociological and cultural sense of the term, as it used 1st time in the University of Gallaudet, in Washington DC, in 1972, as reported by Moura (2000) and Mottez (2006).

Mottez (2006) describes a multiplicity of names for the deaf ("deaf-mute", "hearing impaired", etc.) and argues that such names are often characteristic of society's denial of deafness. The contributions of Bernard Mottez were particularly relevant in the sociological approach that emerges in the conceptualization of Deafness, the Deaf Culture and the use of Sign Language.

The concept of deafness as a sensorial deficit is aimed only at organic-biological aspects derived from oral philosophy, which conceives the socially included deaf individuals through intense training, both in terms of speech and lip reading as well as auditory training, in the attempt to make the deaf oralized (Nóbrega, Andrade, Pontes, Bosi & Machado, 2012). This is usually diffused through the availability of hearing aids and clotting implants in auditory correction, used by health services in response to public policies towards the hearing impaired (Souza, Brito, Bento, Gomez, Tsuji, & Hausen-Pinna, 2011; Ramos, Jorge, Teixeira, Ribeiro & Paiva, 2015). However, despite the technological advances in hearing recovery, there are reports of resistance to the use of these devices due to the discomfort caused by the interference of audible noise, and the psychological sufferings as a consequence of the family's imposition to make them listeners (Nóbrega et al, 2012; Silva & Abreu, 2014).

In accordance with the special needs of the deaf, Art. 2 of Decree No. 5.626 (Brazil, 2005) takes into account the biological factor of deafness, but considers the deaf person to be able to interact socially through sign language and through it be able to spread his/her own culture and identity. The construction of social identity occurs within and by sharing a culture, in the production of speeches and meanings that are attributed during interpersonal coexistence. This implies that, from a cultural point of view, the individual does not consider himself/herself deaf because of a sensory limitation, but rather because they share common experiences with each other as an integral part of a social group (Nóbrega et al, 2012).

Integral attention in health care for the Deaf person is essential, and in Brazil, Art. 2 of Law No. 7.853 (Brazil, 1989) places on the Public Power and its organs the responsibility to assure to this population the full exercise of their rights, among them that of health. It is worth mentioning that since the creation of the current health system - Single Health System (SUS), access to health care has become a right of all citizens regardless of their social, economic and cultural status, among others. This is guaranteed by the Norms and Guidelines that guide the legal framework of the SUS expressed in Law No. 8.080 (Brazil, 1990), which provides for the conditions, organization and functioning of health services at different levels of care. It also entitles the government the responsibility to ensure universal and equal access to all Brazilian citizens.

The provision of services, the atmosphere of physical premises, professional training and access to information should be of good quality. Nonetheless, studies have revealed non-compliance and weaknesses in the provision of health care for the hearing disabled (Andrade, Fernandes, Ramos, Mendes, & Alves, 2013; Castro, Lefèvre, Lefèvre & Cesar, 2011; França, 2011; Ribeiro et al, 2010; Vianna, Cavalcante & Acioli, 2014).

In this context, and based on the hypothesis that the hearing loss does not cognitively incapacitate the subjects, nor does it prevent them from recognizing the quality of the services provided in consonance with their rights as citizens, the following question was made: *What is the deaf person's level of satisfaction with the quality of actions and services offered in public health services?*

In agreement, the main objective of this study was *to evaluate the level of satisfaction of the deaf person with the quality of the actions and services offered in the public health units*.

1. CONCEPTION OF DEAFNESS

The legal framework of Brazil, Art. 2 of Decree 5.626 of 2005 (Brazil, 2005) defines the deaf person as "*one who, through hearing loss, understands and interacts with the world through visual experiences, manifesting their culture mainly through the use of the Brazilian Sign Language - Libras*" (Brazil, 2005). Art. 2 of Decree 5.626 of 2005 considers the sensory loss measured by an audiogram, but does not conceive the deaf person as a disabled person. Instead, he/she is seen as an individual cognitively active with the surroundings in which he/she lives in. Hearing impairment is defined as the "*partial or total bilateral loss of forty-one decibels (dB) or more, measured by an audiogram at the frequencies of 500Hz, 1,000Hz, 2,000Hz and 3,000Hz*." (Brazil, Decree No. 5296, 2004).

Giuseppe Rinaldi et al. (1997) quoted by Wilhelms (2013), advocates that deafness, apart from level classification, may be presented as: unilateral (when only one ear is affected); bilateral (when there is an impairment of both ears); congenital (caused

during pregnancy); acquired (occurring during or after childbirth), in which the latter can be subdivided into pre-lingual - before the acquisition of language - or post-lingual manifested during the course of life after language use.
The conception of deafness integrates a historical context that, depending on the individual or collective understanding as well as the social circumstances of the ideological foundation, are practically antagonistic. McDonnell (2016) argues that there are two dominant ideologies that have significantly influenced the interpersonal relationship between listeners and deaf people: the ideology of "*normalization*" and the ideology "*disability rights and deaf rights*." In accordance with the aforementioned normalization ideology, Nóbrega et al (2012) refer to this practice as an "*oralist philosophy*" for trying to oralize deaf people through intense oral and auditory training, even through "*body punishment practices*" without considering their linguistic specificities and cultures, as a consequence of a belief which is directly related to linguistic and intellectual development through oralism.

1.1 The hearing society´s concept of deafness

The perception of the subject with an auditory sensorial deficit can be directly related to the concept of deafness and hearing impairment that each social segment possesses, either by normative and majority determination on behalf of the listeners, or by the empowerment of the deaf population.
There are two understandings of deafness: the pathological and the cultural one, and these concepts have repercussions on the lives of the deaf and on how these subjects are perceived by the listening communities.
The repercussion of the idea that deafness was a disability made the deaf have to attend schools for their listeners and undergo extensive oralization and lip-reading exercises without the right to use sign language. Attempts to turn deaf people into listeners have led to a number of adaptation problems for the deaf and an issue of accepting their limitations on behalf of family members and society in general (Pereira, 2013).
Mottez (2006) found that the Deaf were "massively under-educated. The fact that they are, on average, neither more nor less intelligent than the audience is enough to show that this deficiency cannot be attributed to them. It has its origin in the inadequacy of the education given to them: a system based on the fetishism of speech." (Mottez, 2006, p.247) Gestures were banned for a long timein deaf institutes, in order to force them to speak. The sociologist recalls that it was in the United States and Scandinavian countries, in the 1960s, that sign language began to be regarded as a "real" language (Mottez, 2006).
In general, the limited vision of deafness as a disability gives rise to challenges in families regarding the acceptance of deafness, difficulty in communicating with children, the fight against existing social prejudice, and resistance to the use of sign language by family members as well as society (Pereira, 2013, Santos & Molon, 2014).
A widely adopted short-term understanding for the correction of hearing impairment concerns the use of increasingly sophisticated technology, such as the provision of hearing aids and cochlear implants. Moreover, there is already evidence of an improvement in the quality of life of those who have implants (Souza, Brito, Bento, Gomez, Tsuji, & Hausen-Pinna, 2011; Ramos, et al, 2015).
The use of technological devices for the normalization of the deaf population generates an expectation of inclusion within the family, health professionals and the population in general. Nevertheless, there are coexisting reports of deaf people who have been forced to use these means, which has caused negative feelings such as discomfort, pain, irritability, sadness, non-adherence to the use and treatment, as a result of increased noise and perceived noise as well as the impossibility of listening to one's voice, especially in high levels of deafness (Nóbrega et al, 2012).
On the other hand, many deaf people do not adhere to treatment because they are denied the right to information, the choice of treatment and their opinion about whether or not to accept the procedures that need to be performed. Thus, the necessity to improve healthcare services in this niche of the population is major (Nóbrega et al, 2012).

1.2 The deaf community´s concept of deafness

The perception of deafness among the deaf is not homogeneous. There are deaf people who, living in the community, acquire a deaf identity and do not see themselves as having a hearing impairment. Likewise, there are deaf people who, living in the midst of listeners or even deaf people, consider themselves to be inferior and therefore disabled and, as a result, seek other forms of becoming closer to the listeners (Wilhelms, 2013).
The non-identification as deaf, and/or non-acceptance of the deaf culture, implies a risk of social exclusion, since subjects have a limitation in the field of oral language that makes it impossible to acquire new knowledge and prevent them from actively participating in society.
Among subjects with a deaf identity, the use of Libras in communication has been increasingly implemented. The syntactic order of this language follows a very unique formation that follows a logical visual sequence that differs from the Portuguese grammatical order. It requires a certain type of body language that helps with the meaning of the words to better understand their meaning in context (Pereira, 2013).

Since Brazilian Sign Language (Libras) is a visual, spatial and natural language, it has its own grammar, which is easy to acquire unlike the Portuguese language. It reinforces the idea that the deaf pay more attention when it comes to understanding the cognitive forms presented to them, which are not always understandable (Pereira, 2013).
In order to understand the grammatical organization of Libras, this research is guided through the definitions of Capovilla & Rafael (2001) that present a clear and concise composition of this language. Thus, the gestural and visual communication used in this study is based grammatically on five parameters: hand configuration (HC); point of articulation (PA); movement (M), direction (D) and unnatural markers that are the facial expressions. It is the articulation of these elements that generates signals containing the information that comes closest to what the interlocutors wish to express.

2. METHODS

A descriptive-exploratory study with a cross-sectional approach developed in Alagoas, a Brazilian north-eastern state, with 15 deaf people with severe or profound hearing loss of both genders, who communicate through the Brazilian Sign Language (Libras), over 18 years of age and who were treated in public health services.
Accepting the postulate that deaf people do not have a disabling cognitive limitation, but instead a sensory dysfunction and that is why they are able to evaluate the quality of the actions and services provided to the population, the objective of this study was to evaluate the deaf person's perception of the quality of actions and services offered in Brazilian public health institutions of the region under study.
This nature of study was chosen because it allows us to describe how Deaf people perceive the world of listeners, especially on the topic of the health care provided to them.
The developmental stages of the study were based on the theoretical reference of Minayo et al. (2011): 1) exploratory phase; 2) field work; 3) analysis and treatment of empirical and documentary material through ordering, classification and analysis of the data. The first phase also included a bibliographic search to guide the theoretical reference, in the second approach with the subjects of the study by means of snowball sampling for data collection through a structured questionnaire (with the help of an interpreter), and in the third the organization of data into categories, followed by content analysis.

2.1 Participants

The selection of participants was based on the technique of non-probabilistic snowball sampling (Dewes, 2013). Of the five initial contacts (seeds), contact waves were generated, which resulted in five groups of seeds with around five participants each, making a total of twenty-five participants, of whom fifteen accepted to participate in the study and ten were excluded by refusal or non-attendance in the meetings scheduled.
Fifteen deaf people with profound hearing impairment, who were users of Libras, participated. There were 10 male individuals and 5 female individuals, aged between 20 and 38 years old, 6 married and 9 single, all Christians (6 Catholics and 9 Evangelicals); 11 attended 8 or more years of schooling, 4 were attending higher education and 3 referred to having a school level of less than three years.
With regard to family income, the majority (06) state their income is less than minimum wage. Of the 10 who work, the professions/jobs are: a busboy, a trader, teacher, administrative assistant, salesman and freelancer. Those who are not professionally active are: a student, a retiree, a housewife and two people who are unemployed.

2.2 Data collection instrument

The data collection was supported using the Satisfaction Questionnaire and with the help of a certified Libras interpreter for placing the question and translating the answers. Given that Libras is a sign language and considering that there is no specific sign for the Portuguese term that indicates the expressions concerning the level of satisfaction, we used adapted phrases and engravings that enabled the communication with the participants.
The data collection took place during the scheduled meetings, after previously having been in contact with the participants.
The *ad hoc* satisfaction questionnaire consisted of 10 multiple choice questions, organized into categories that were grouped according to thematic order, structured in the light of the theoretical references: category (A) quality of communication in health services to evaluate the principle of universality; category (B) quality of care to assess the principle of completeness; category (C) quality of the consultation to evaluate the principle of fairness.
In categories A, B and C the participants answered the evaluation items using the criteria scored according to the level of satisfaction accompanied by a figure that best expressed their perception, with the following match: 1- Satisfied 2- Very satisfied 3 - Unsatisfied 4 - Very unsatisfied. The sum of the first two (1 and 2) reflects a level of positive satisfaction and of the last two (3 and 4) a level of negative satisfaction.
Questions related to socio-demographic data were also included: age, gender, schooling, marital status, occupation and family income.

It was decided to ask questions focusing on the factors that determine the quality of services referred to in Assada (2001) cited by Fadel (2006). The choice of using these factors to evaluate the quality of health services in general was due to their relevance so as to analyse the correlation with the principles of completeness, universality and fairness of the SUS.

2.3 Procedures

Initially, it was sought to identify deaf people among listeners, who were in contact with them and who would enable them to get closer to the research team. Five people were contacted and a day and place was arranged according to the interviewee's choice. The information contained in the ad hoc questionnaire was read and explained through the Brazilian Sign Language (Libras) with the support of a certified interpreter. With the help of this professional, there was a brief presentation on the objectives of the research and a clarification as to the identity of the participants who freely acceded to participate in this research, exposing their perceptions about the quality of care provided by the health services, according to the Consent Form that was signed.

Guidance for completing the questions was followed.

The process of data collection was filmed for storage as well as the analysis of information expressed during the research communication - interpreter of Libras - deaf people. This procedure was aimed at ensuring the rigorous analysis and interpretation of the information contained in the data acquired when completing the answers to the questions. The expressions of the participants were also observed and recorded through filming. Each questioning lasted approximately 30 minutes. After the application of the data collection instrument, they were asked to refer between three and six new contacts. Explicit permission was obtained in order to film the participants, and it was guaranteed that the collected material would be used only for research purposes. Anonymity and confidentiality in the treatment of information and dissemination of results were ensured by assigning a code to each interviewee and respective information material collected that ranged from S1 to S15.

2.4 Analysis of the data

The collected data were grouped through the Microsoft Office Excel version 2007 tool, organized into Categories A, B and C, previously described and evaluated according to the trajectory of thematic content analysis using interpretive analysis.

The control of potential biases associated with the results was performed, obtaining its validation by the participants (deaf people), thus giving them the opportunity to compare the data previously provided with the researcher's interpretation.

3. RESULTS

Satisfaction with healthcare

Most of the participants (86.7%) were very unsatisfied with the communication of the employees and 80% reported lack of informative and educational materials. There was variation in the perception of punctuality to what concerns scheduling appointments and delivery of test results, in which 46.7% were positive (sum of scores 1 and 2) and 53.3% showed a negative satisfaction level (sum of scores 3 and 4). This result reflects a possible inequality gap in health care among services. (Table 1).

Table 1 - Satisfaction with healthcare

Level of Satisfaction	The service of the employees						The timeliness in scheduling appointments and delivering test results						The availability of informative notices and educational material in Libras					
	Male		Female		Total		Male		Female		Total		Male		Female		Total	
	n=10	100 %	n=5	100%	n =15	100%	n=10	100%	n=5	100%	n=15	100%	n=10	100 %	n =5	100%	n =15	100%
Very Satisfied	-	0,0	-	0,0	-	0,0	1	10	-	0,0	1	6,7	-	0,0	-	0,0	-	0,0
Satisfied	-	0,0	-	0,0	-	0,0	4	40	2	40	6	40	-	0,0	-	0,0	-	0,0
Unsatisfied	2	20	-	0,0	2	13,3	1	10	2	40	3	20	2	20	1	20	3	20
Very Unsatisfied	8	80	5	100	13	86,7	4	40	1	20	5	33,3	8	80	4	80	12	80

When questioned about the quality of care regarding the structure, responses remained at the level of high dissatisfaction: 60% are unsatisfied with the physical structures, as opposed to 33.3% who consider them satisfactory.
The following aspects were mostly evaluated as "very unsatisfied": the access to specialized services (66.6%) and the availability of drugs or materials and the presence of the interpreter, both with 33.3%.
The variation of the satisfaction level in relation to the physical structure may be due to the architectural changes that have occurred in recent years as well as the construction of the new basic health units within the parameters established in comparison with others in which compliance with the legal requirements has not yet occurred.

Table 2 - Satisfaction related to the quality of the assistance regarding the structure and specialized services

Level of Satisfaction	The presentation of the physical structure (ventilation, lighting, hygiene and quantity) of the reception are, offices, bathrooms.						Access to specialized service or care					
	Male		Female		Total		Male		Female		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Very Satisfied	-	0,0	1	20	1	6,7	-	0,0	-	0,0	-	0,0
Satisfied	4	40	1	20	5	33,3	4	40	1	20	5	33,3
Unsatisfied	2	20	2	40	4	26,7	3	30	2	40	5	33,3
Very Unsatisfied	4	40	1	20	5	33,3	3	30	2	40	5	33,3

Satisfaction regarding quality of care in private institutions
There were reports of somewhat more qualified services among professionals in private services.
According to S3, the payment for the services assures better service. Both S1 and S14, when evaluating customer care of the public service, commented that the disrespect is evident. That is, even after they had explained that they were deaf, they were approached with apathy.
"I do not go to the health centre, I pay for an appointment and I get better customer service (S3)". "There are doctors who perform services well, and other who don't ... it depends (S14)". "You show that you are deaf and they laugh, they don't care, and signal you to wait. They don't respect the rights of the deaf. They call you as if you were a listener. And you wait without knowing if they've called you already (S1)".

4. DISCUSSION

The discussion begins by analysing the methodological options of the research. It is emphasized that sharing the results on a topic in which there is a knowledge gap based on the perception of deaf people, is a positive implication of qualitative research. Nonetheless, the implications and impact of the study matter to the social sphere of the particularity of the context studied because, despite the theoretical arguments that support the main results presented, the limitations underlying the methodological and research options of a qualitative nature should also be taken into account, namely **n** of the sample selection. As a positive element, resorting to the use of certified interpreters (selection criterion) so as to control any biases associated with the communication process and to validate the data interpreted from the participants (deaf people). The control status assigned to the filming that occurred during the data collection process is also highlighted, aiming to provide thoroughness to the data obtained and subsequent investigative inferences.

Concerning the topic at hand, deaf people need more attention given the barrier in communication with the hearing society, which is becoming a health risk in this population (France, 2011).

Although they have their rights guaranteed by law, this does not appear to be the case in our sample as most respondents were very dissatisfied with the service of employees, reported lack of informative and educational materials, and were dissatisfied with the scheduling of appointments and delivery of test results.

In addition, the use of other resources for communicating with the hearing impaired was considered inadequate, exposing them to imminent risks in the diagnosis and consequent misconduct in the treatment (Araújo et al., 2015).

In the service-patient relationship, the intolerance of the professionals in dealing with the deaf population is worrisome and evidenced in the lack of patience and in directing the person accompanying the patient to collect information about his/her health status, as evidenced in the statement of S9.

This fact corroborates the influence of the normative ideology on interpersonal relations between professionals and the deaf person, described by McDonnell (2016), observed in the hostile behaviour in response to the deafness of the hearing society and the lack of consideration of intellectual abilities and promotion of autonomy/independence. "*Everything takes place very quickly, they talk to the person accompanying you, hand out the prescription and call another patient*" (S9).

The lack of knowledge in sign language among health professionals generates, in most cases, a discomfort in communication between both parties and the dependence on family members and interpreters, thereby compromising respect for equity during customer care (Vianna et al., 2014).

In the absence of family members during an appointment, deaf people who do not have access to quality communication are often forced to hire interpreters as a result of professionals who are unprepared for this situation or health services that do not have one available. Thus, it is observed the non-compliance with the principles of universality evidenced by the lack of informative resources, as well as of the fairness evidenced in precarious communication (Costa et al, 2009), as stated by S5. "*There is no interpreter, we pay every time. He does not know how to speak to the deaf* (S5)."

If on the one hand communication is crucial for a better fulfilment of the health needs, the physical premises should be too, since both communication and the physical environment must provide therapeutic conditions that are favourable to the clients. The provision of health services within a suitable physical structure favours both the reception of the clientele as well as the better performance of the professionals who work there (Medeiros, Souza, Barbosa & Costa, 2010).

Still, in this study, there was a dissatisfaction among participants regarding this dimension, reflecting fragility in the principle of equality as a result of precariousness in the environment, as reported by S2, S8 and S4. Similar results were also observed by Castro et al. (2011), concluding that the weaknesses reported by people with disabilities violated the principle of fairness: "*A hot place* (S2)". "*Small, crowded ... hot, hot* (S8)". "*Dirty, very dirty* (S14)". Similar results were also observed by Castro et al. (2011), concluding that the impairments reported by people with disabilities violated the principle of equity.

Regarding the principle of completeness, the satisfaction levels among participants was close regarding the quantity of medicine available in the services, access to specialized care and presentation of the physical structure. This may be associated with the existing variations in the supply of the assistance rendered, as well as with the possible construction of physical spaces adapted to the standards established by the existing technical norms.

Finally, results show a lack of compliance with the principles of the SUS, presenting as crucial weaknesses the lack of adequate communication and the precariousness of the clinical environment, which is of the utmost importance for the performance of a support focused on the promotion of the health and quality of life of the population in general and of the Deaf in relation to the particular assistance specificities that are intended to be inclusive.

CONCLUSIONS

The linguistic barrier observed among deaf and hearing people is characterized as one of the main difficulties faced by the deaf in the daily life of today's societies.

As an evaluation parameter of the perspective of this group of people, the following was used: the understanding of access to information, the quality of customer care and appointments, correlated with the principles of universality, completeness and equity of the Single Health System (SUS) in force in Brazil.

The collaboration of a certified interpreter in the communication process, validation of the data interpreted from the participants (deaf people) was assumed as a methodological strategy to impose rigor in the collection and treatment of data. However, in doing so, there is also a hypothetical source limitation associated with the risk of bias in the control of the results.

It should be noted that the deaf person's perception of the quality of the actions and health services provided justifies the study, whose qualitative approach made it possible to take a deeper look at the participants of this research concerning an important indicator for assessing health care fragility.

The present study allowed for the research questions to be answered, and it was verified that the participants are aware of the non-fulfilment of the right to access health in an egalitarian, impartial and integral way, since they manifest a high level of dissatisfaction with the quality of actions and services provided in the health facilities.

It was also found that little preparation to communicate with Deaf users manifests itself in the communication gap between service providers and Deaf users, as well as the unavailability of informative or educational resources combined with the hiring of interpreters directly by deaf patients to meet their needs, reflect an inoperativeness of the existing health policies and a deviation from the responsibility of the State regarding the security of full access to health services without loss or damages for this specific population.

It became clear that auditory limitation did not detract from the users' understanding of the quality of health actions and services that should be provided; on the contrary, the level of reported unsatisfaction expresses the existing challenge to achieve the complete care of people with special needs motivated by deafness in the public health system in Brazil. Only then will it be possible to promote the universality, completeness and equity of health services to people with special needs, such as the deaf person.

As final reflections on the research carried out, it is reiterated that from the beginning of the conceptualization of the study, there was the concern in developing a rigorous methodological work with clarification of the steps taken. Despite this carefulness, it is assumed that the low **n** of the sample constitutes a limitation in the present study. According to Cunha-Nunes (2006), these fragilities inherent to empirical studies with a cross-sectional matrix would be avoided had the sample been larger and if a study of a longitudinal nature were chosen. However, this was not possible due to time limitations in order for it to be carried out.

To conclude, it is emphasized that, although a comprehensive study was carried out, there is still a need for replication of the research in broader samples in order to understand whether the trend of the results encountered remains the same. This tells us that a uni-factorial study is too simplistic in understanding this problem, and that there is a need to research using multidimensional and multifactorial approaches. Considering the deaf person as a whole biopsychosocial, endowed with cultural and spiritual identity, an integrative design was tested that allowed to analyse the health care tendencies in Brazil according to the perspective of the users with special aid needs, deaf people. Hence, the positive aspects of the study should be emphasized, providing useful information to understand the multiple factors that influence the health care process and, consequently, satisfaction with health care, and thereby raise awareness and reflection on the quality of health services.

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SATISFAÇÃO DA PESSOA SURDA COM A QUALIDADE DA ASSISTÊNCIA EM SAÚDE

SATISFACTION OF DEAF PEOPLE WITH THE HEALTH CARE SYSTEM QUALITY

SATISFACCIÓN DE LA PERSONA SORDA CON LA CALIDAD DE LA ASISTENCIA SANITÁRIA

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RESUMO

Introdução: A barreira de comunicação existente entre as pessoas surdas e ouvintes prejudica a participação ativa da pessoa surda na sociedade.

Objetivo: Avaliar a satisfação da pessoa surda com a qualidade das ações e serviços oferecidos nas unidades de saúde públicas.

Métodos: Estudo de natureza exploratório-descritiva e enfoque transversal, realizado com uma amostra de 15 pessoas surdas com perda auditiva severa ou profunda, de ambos os sexos (10 homens e 5 mulheres), que se comunicam através da Língua de Sinais (Libras), com idade compreendida entre 20 e 38 anos, usuárias dos serviços públicos de saúde. Foi utilizado um Questionário de Satisfação.

Resultados: A maioria dos participantes (86,7%) declararam-se muito insatisfeitos com a comunicação dos funcionários, 80% referiram ausência de materiais informativos e educativos e 53,3% demonstram nível de satisfação negativo, quanto à pontualidade no agendamento das consultas, marcação e entrega de exames.

Conclusões: Os resultados mostram a necessidade de contratação de intérpretes para melhorar a assistência das pessoas surdas.

Palavras-chave: Surdez; Satisfação; Assistência; Saúde

ABSTRACT

Introduction: The communication barrier that exists between deaf and hearing people harms the active participation of deaf people in society.

Objective: Evaluate deaf people's satisfaction regarding the quality of services and actions, given by public health units.

Methods: An exploratory-descriptive study with a cross-sectional approach was carried out in a sample of 15 deaf people with severe or profound hearing loss of both sexes (10 men and 5 women), who communicate through the Sign Language (Libras), aged between 20 and 38 years, users of the public health services. A Satisfaction Questionnaire was used.

Results: The participants majority (86.7%) were very dissatisfied with the communication of the employees, 80% reported lack of informative and educational materials and 53.3% showed a negative level of satisfaction regarding the punctuality in appointment marking, exams scheduling and delivery.

Conclusions: The results show the need to hire interpreters to improve care for deaf people.

Keywords: Deafness; Satisfaction; Assistance; Health

RESUMEN

Introducción: La barrera de comunicación existente entre las personas sordas y oyentes perjudica la participación activa de la persona sorda en la sociedad.

Objetivo: Evaluar la satisfacción de la persona sorda con la calidad de las acciones y servicios ofrecidos en las unidades de salud públicas.

Métodos: Estudio de carácter exploratorio-descriptivo y enfoque transversal, realizado con una muestra de 15 personas sordas con pérdida auditiva severa o profunda, de ambos sexos (10 hombres y 5 mujeres), que se comunican a través de la Lengua de Signos (Libras), Con edad compendida entre 20 y 38 años, usuarias de los servicios públicos de salud. Se utilizó un Cuestionario de Satisfacción.

Resultados: La mayoría de los participantes (86,7%) se declararon muy insatisfechos con la comunicación de los funcionarios, el 80% señaló ausencia de materiales informativos y educativos y el 53,3% demuestra un nivel de satisfacción negativa, en cuanto a la puntualidad en la programación de las directrices Consultas, marcado y entrega de exámenes.

Conclusións: Los resultados muestran la necesidad de contratación de intérpretes para mejorar la asistencia de las personas sordas.

Palabras Clave: Sordera; Satisfacción; Asistencia; Salud

INTRODUÇÃO

A compreensão da surdez depende das conceções ideológicas adquiridas ao longo da História, e tem relação direta com a inclusão ou não dos sujeitos no meio social predominantemente ouvinte. Na presente pesquisa foram apreciadas duas ideologias com base nos trabalhos McDonnell (2016): a normalização que consiste em tornar o Surdo em ouvinte ou oralizado o mais semelhante possível à sociedade ouvinte; e a dos direitos dos Surdos e da deficiência cujas premissas são torná-los inclusos socialmente por meio do respeito pelos direitos sociais e culturais.

Neste artigo optou-se por utilizar a palavra "Surdo" com maiúscula, seguindo a linha bibliográfica da especialidade que defende a definição da palavra no sentido sociológico e cultural do termo, tal como utilizado pela 1.ªvez do termo na Universidade de Gallaudet, em Washington DC, em 1972, como referido por Moura (2000) e Mottez (2006).

Mottez (2006), descreve existir uma multiplicidade de nomes para designar os surdos ("surdo-mudo", "deficientes auditivos", etc.) e argumenta que essas denominações são muitas vezes características da negação da surdez pela sociedade. Os contributos de Bernard Mottez, foram particularmente relevantes pelo enfoque sociológico que emerge na conceptualização do *Ser Surdo, da Cultura Surda* e utilização *da Língua de Sinais.*

A conceção de surdez como sendo *deficit* sensorial, visa apenas os aspetos orgânico-biológicos oriundos da filosofia oralista, que concebe os Surdos inclusos socialmente por meio de treinos intensos tanto da fala e leitura labial, como do treino auditivo na tentativa de tornar o Surdo oralizado (Nóbrega, Andrade, Pontes, Bosi & Machado, 2012). Esta é usualmente difundida através da disponibilidade de aparelhos auditivos e implante cloquear na correção auditiva, utilizada pelos serviços de saúde em resposta às políticas públicas face aos deficientes auditivos (Souza Brito, Bento, Gomez, Tsuji, & Hausen-Pinna, 2011; Ramos, Jorge, Teixeira, Ribeiro & Paiva, 2015). Contudo, apesar dos avanços tecnológicos da recuperação auditiva, há relatos de resistências ao uso destes aparatos em decorrência do desconforto causado pela interferência dos ruídos audíveis e dos sofrimentos psicológicos em consequência da imposição familiar para torná-los ouvintes (Nóbrega et al, 2012; Silva & Abreu, 2014).

Em consonância ao atendimento das necessidades especiais dos Surdos, o 2.º do Decreto n.º 5.626 (Brasil, 2005) tem em conta o fator biológico da surdez, porém considera a pessoa surda um sujeito capaz de interagir socialmente através da língua gestual e por meio dela difundir sua própria cultura e identidade. A construção da identidade social dá-se no interior e compartilhamento de uma cultura, na produção de discursos e dos significados atribuídos durante a convivência interpessoal, isso implica dizer que, do ponto de vista cultural, o indivíduo não se considera Surdo por causa de uma limitação sensorial e sim porque ao compartilhar experiências comuns entre si se vê como parte integrante de um grupo social (Nóbrega et al, 2012).

A assistência integral à saúde à pessoa surda é imprescindível e no Brasil, o Art. 2.º da Lei N.º 7.853 (Brasil, 1989) coloca sobre o Poder Público e seus órgãos, a responsabilidade de assegurar a esta população o pleno exercício de seus direitos, entre eles o da saúde. É pertinente salientar que a partir da criação do sistema de saúde vigente - Sistema Único de Saúde (SUS), o acesso ao serviço de saúde passou a ser um direito de todos os cidadãos independentemente do seu nível social, económico, cultural, garantidos pelas Normas e Diretrizes que norteiam o arcabouço jurídico do SUS expressados na Lei n.º 8.080 (Brasil, 1990) que dispõe sobre as condições, a organização e o funcionamento dos serviços de saúde nos diversos níveis de atenção, e confere ao governo a responsabilidade de assegurar o acesso universal e igualitário a todos os brasileiros.

A oferta de serviços, a ambiência dos espaços físicos, a capacitação profissional e o acesso à informação devem ser de boa qualidade, porém os estudos revelaram incumprimento e fragilidades na assistência à saúde aos portadores de deficiência (Andrade, Fernandes, Ramos, Mendes, & Alves, 2013; Castro, Lefèvre, Lefèvre & Cesar, 2011; França, 2011; Ribeiro et al, 2010; Vianna, Cavalcante & Acioli, 2014).

Neste enquadramento, e tendo por base a hipótese de que a perda auditiva não incapacita cognitivamente os sujeitos, nem os impede de reconhecer a qualidade dos serviços prestados em consonância com os seus direitos de cidadãos, para orientar a pesquisa elaborou-se a seguinte questão de investigação: *Qual o nível de satisfação da pessoa surda com a qualidade das ações e serviços oferecidos nas unidades de saúde públicas?*

Em concordância, o presente estudo teve como objetivo principal *avaliar o nível de satisfação da pessoa surda com as ações e serviços oferecidos nas unidades de saúde públicas.*

1. CONCEPTUALIZAÇÃO DA SURDEZ

O enquadramento jurídico do Brasil, define a pessoa surda como *"aquela que, por ter perda auditiva, compreende e interage com o mundo por meio de experiências visuais, manifestando sua cultura principalmente pelo uso da Língua Brasileira de Sinais – Libras".* (Brasil, 2005) O Art. 2.º do Decreto n.º 5.626 de 2005 defende aferir a perda sensorial aferida por audiograma, porém concebe a pessoa surda não como um deficiente, mas como um indivíduo ativo cognitivamente com o meio em que vive. A deficiência auditiva é conceituada como a *"perda bilateral, parcial ou total, de quarenta e um decibéis (dB) ou mais, aferida por audiograma nas frequências de 500Hz, 1.000Hz, 2.000Hz e 3.000Hz".* (Brasil, Decreto n.º 5296, 2004).

Giuseppe Rinaldi et al (1997) citado por Wilhelms (2013) advoga que a surdez, além da classificação por nível, pode apresentar-se como: *unilateral* (quando acometido um ouvido apenas); *bilateral* (quando há comprometimento de ambos os ouvidos);

congénita (ocasionada durante a gestação); adquirida (ocorrida durante ou após o parto), podendo esta última ser subdividida em *pré-lingual* – antes da aquisição da linguagem ou *pós-lingual* manifestando-se durante o decorrer da vida após uso da linguagem.
As conceções de surdez integram um contexto histórico que, a depender da compreensão individual ou coletiva e da conjuntura social de base ideológica, são praticamente antagónicas. McDonnell (2016) defende existirem duas ideologias dominantes que influenciaram significativamente a relação interpessoal entre ouvintes e Surdos: a ideologia da *"normalização"* e a ideologia *"direitos da deficiência e direitos Surdos".* Em consonância com a ideologia de normalização citada, Nóbrega et al (2012) referem-se a essa prática como *"filosofia oralista",* por tentar oralizar os Surdos através de treinos orais e auditivos intensos, até mesmo por *"práticas de castigo corporal",* sem considerar as suas especificidades linguísticas e culturais, em consequência de uma crença da relação direta do desenvolvimento linguístico e intelectual por meio do oralismo.

1.1 A conceção da sociedade ouvinte sobre a surdez

A perceção do sujeito portador de um défice sensorial auditivo pode estar diretamente relacionada com a conceção de surdez e deficiência auditiva que cada segmento social possui, quer por determinação normativa e majoritária dos ouvintes, quer por empoderamento da população surda.
Há duas compreensões da surdez: a patológica e a cultural e estas conceções têm repercussões na vida das pessoas surdas e na forma como estes sujeitos são considerados pelas comunidades ouvintes.
A repercussão da ideia de que a surdez era uma deficiência fez com que esta população fosse obrigada a frequentar escolas para os ouvintes e ser submetida a exaustivos treinos de oralização e leitura labial, sem direito ao uso da língua de sinais. As tentativas de tornar os Surdos em ouvintes deram origem a vários problemas de adaptação para estes alunos e de aceitação da limitação destes por parte dos familiares e sociedade em geral (Pereira, 2013).
Mottez (2006) constatou que *os Surdos eram "massivamente sub-educados. O fato de serem em média nem mais nem menos inteligentes do que a audiência é suficiente para indicar que essa deficiência não pode ser atribuída a eles. Tem a sua origem na inadequação da educação que lhes é dada: um sistema baseado no fetichismo da fala "* (Mottez, 2006, p.247). *Os gestos foram durante muito tempo proibidos em institutos de surdos, a fim de obrigá-los a falar. O sociólogo lembra que foi nos Estados Unidos e nos países escandinavos na década de 1960 que a linguagem de sinais começou a ser considerada como uma linguagem "real".* (Mottez, 2006).
De uma forma geral, a visão limitada da surdez como deficiência suscita nas famílias desafios no tocante à aceitação da surdez, à dificuldade de comunicação com os filhos, à luta contra o preconceito social existente, à resistência ao uso da língua de sinais tanto dos membros da família como da sociedade (Pereira, 2013; Santos & Molon, 2014).
Um entendimento imediatista muito adotado com vista à correção da deficiência auditiva diz respeito à utilização de tecnologia cada vez mais sofisticada, como a disponibilização de aparelhos auditivos e implantes cocleares, existindo já evidências sobre a melhoria da qualidade de vida dos implantados (Souza Brito, Bento, Gomez, Tsuji, & Hausen-Pinna, 2011; Ramos, et al, 2015).
O recurso aos aparatos tecnológicos para normalização da população surda gera, na família, nos profissionais de saúde e na população geral, uma expectativa de inclusão. Contudo coexistem também relatos de pessoas surdas que se viram obrigados a fazer uso destes meios, o que originou sentimentos negativos como desconforto, dor, irritabilidade, tristeza, não adesão ao uso e tratamento, em decorrência do aumento do barulho e ruídos percebidos. (Nóbrega et al, 2012).
Por outro lado, muitos cidadãos Surdos não aderem ao tratamento porque lhes é negado o direito à informação, à escolha do tratamento e a sua opinião sobre aceitar ou não os procedimentos a serem realizados, pelo que se impõe melhorar a assistência em saúde a este segmento da população (Nóbrega et al, 2012).

1.2 A conceção da surdez na comunidade surda

Mottez (2006) defende que a cultura surda é a cultura peculiar aos membros da comunidade de Surdos. É composta por indivíduos que usam língua gestual, afirmando o autor que a língua de sinais é verbal e *que "simplesmente usa outros canais do que a linguagem oral"* (Mottez, 2006, p.255).
O conceito de surdez entre esta população não é homogéneo. Existem pessoas surdas que, ao viverem em comunidade, adquirem identidade surda e não se veem como portadores de deficiência auditiva, assim como assim como há outras pessoas surdas que, ao conviverem com pessoas ouvintes, ou até mesmo entre concidadãos Surdos, se consideram inferiores e, portanto, deficientes e que, por conseguinte, buscam outras formam de aproximação com os ouvintes (Wilhelms, 2013).
A não identificação como Surdo e, ou, a não-aceitação da cultura surda implica risco de exclusão social, pois os sujeitos têm uma limitação no domínio da linguagem oral que os impossibilita adquirir novos conhecimentos e os impede de participar ativamente na sociedade.
Entre os sujeitos com identidade surda, o uso da Libras na comunicação vem sendo cada vez mais implementado. A ordem sintática desta língua obedece a uma formação própria que segue uma sequência lógica visual que difere da ordem gramatical portuguesa, necessitando, também, de recorrer à expressão corporal que complementa o significado das palavras para melhor compreensão do sentido destas (Pereira, 2013).

A Libras, por ser uma língua visual, espacial e natural, possui uma gramática própria, de fácil aquisição, ao contrário da língua portuguesa. (Pereira, 2013).
Para fins de compreensão da organização gramatical da Libras optou-se, nesta pesquisa, pelas definições de Capovilla & Rafael (2001) que apresentam de forma clara e concisa a constituição desta língua. Assim, a comunicação gestual e visual utilizada neste estudo está baseada gramaticalmente em cinco parâmetros: configuração da mão (CM); ponto de articulação (PA); movimento (M), direção (D) e marcadores não naturais que são as expressões faciais. É a articulação desses elementos que gera sinais contendo a informação que mais se aproxima do que os interlocutores desejam expressar.

2. MÉTODOS

Estudo de natureza exploratório-descritiva e enfoque transversal desenvolvido em Alagoas, estado do nordeste brasileiro, com 15 pessoas surdas portadoras de perda auditiva severa ou profunda, de ambos os sexos, que se comunicam através da Libras, maiores de 18 anos de idade, utentes que foram atendidos nos serviços públicos de saúde.
Aceitando o postulado de que as pessoas surdas não têm uma limitação cognitiva incapacitante e sim uma disfunção sensorial e que por isso são capazes de avaliar a qualidade das ações e serviços prestados a população, o estudo teve como objetivo avaliar a perceção da pessoa surda quanto à qualidade das ações e serviços oferecidos nas instituições de saúde públicas da região em estudo.
Optou-se por este tipo de estudo porque permite descrever como as pessoas surdas percebem o mundo dos ouvintes, principalmente nos cuidados de saúde a elas prestados.
As etapas de desenvolvimento do estudo tiveram por base o referencial teórico de Minayo et al. (2011): 1) fase exploratória; 2) trabalho de campo; 3) análise e tratamento do material empírico e documental por meio de ordenação, classificação e análise dos dados. A primeira fase incluiu também o levantamento bibliográfico para nortear o referencial teórico, na segunda aproximação com os sujeitos do estudo por meio de amostragem em bola de neve para recolha de dados através de questionário estruturado (com auxílio de intérprete) e, na terceira, a organização dos dados em categorias, seguida da análise de conteúdo.

2.1 Participantes

A seleção dos participantes teve por base a técnica de amostragem não probabilística em bola de neve (Dewes, 2013). Dos cincos contactados (sementes) iniciais conseguidos, houve formação de ondas de contato resultando em cinco grupos de sementes em torno de cinco participantes cada um, perfazendo vinte e cinco participantes. Destes, quinze aceitaram participar no estudo e dez foram excluídos por recusa ou não comparecimento nos encontros agendados.
Participaram 15 pessoas com deficiência auditiva severa ou profunda, usuárias de Libras, sendo 10 do sexo masculino e 5 do sexo feminino, com idade entre os 20 e os 38 anos. Detinham ainda as seguintes caraterísticas sociodemográficas: 6 afirmaram ser casados e 9 solteiros, todos cristãos (6 católicos e 9 evangélicos); 11 possuíam 8 ou mais anos de estudos, sendo que 4 destas cursavam nível superior; 3 referiram nível escolar inferior a três anos.
No que se refere à renda familiar, a maioria (6) aufere um valor inferior a um salário mínimo. Dos 10 que trabalham, as atividades profissionais são: copeira, sacoleira, professor, auxiliar de administração, vendedor, trabalhador independente. Os não ativos profissionalmente eram: um estudante, um aposentado, uma dona de casa e dois desempregados.

2.2 Instrumento de recolha de dados

A recolha de dados foi suportada em Questionário de Satisfação e auxílio de um intérprete de Libras certificado, para colocação das perguntas e tradução das respostas. Dado que a Libras consiste numa língua gestual e considerando não existir um sinal específico para o termo em português que indique as expressões em torno do nível de satisfação, recorreu-se a frases e gravuras adaptadas que possibilitassem a comunicação com os participantes.
A recolha de dados ocorreu durante os encontros agendados, após contato prévio com os participantes.
O questionário de Satisfação *ad hoc* constou de 10 questões de escolha múltipla, organizadas em categorias agrupadas por ordem temática, estruturadas à luz dos referenciais teóricos: categoria (A) qualidade da comunicação nos serviços de saúde para avaliar o princípio da universalidade; categoria (B) qualidade da assistência para avaliar o princípio da integralidade; categoria (C) qualidade da consulta para avaliar o princípio da equidade.
Nas Categorias A, B e C os participantes responderam aos pontos dispostos para avaliação, utilizando os critérios pontuados segundo o nível de satisfação acompanhados de uma figura que melhor expressasse sua perceção, com a seguinte correspondência: 1- Satisfeito 2- Muito satisfeito 3 - Insatisfeito 4 – Muito Insatisfeito. O somatório dos dois primeiros (1 e 2) traduz um nível de satisfação positivo e dos dois últimos (3 e 4) um nível de satisfação negativo.
Foram também incluídas perguntas referentes aos dados sóciodemográficos: idade, sexo, escolaridade, estado civil, profissão e renda familiar.

Optou-se ainda por elaborar perguntas abertas com foco nos fatores determinantes da qualidade de serviços referidos em Assada (2001) citado por Fadel (2006). A escolha da utilização desses fatores para avaliação da qualidade dos serviços de saúde em geral foi devido à relevância destes para a análise da correlação com os princípios da integralidade, universalidade e equidade do SUS.

2.3 Procedimentos

Inicialmente, buscou-se identificar pessoas surdas entre os ouvintes que tinham contatos com as mesmas e que possibilitassem a aproximação destes com a equipa de investigação. Foram contatadas cinco pessoas e realizado agendamento em dia e local segundo opção do entrevistado. As informações contidas no questionário *ad hoc* foram lidas e explicadas através da Libras com auxílio de um intérprete certificado. Com auxílio deste profissional houve a apresentação dos objetivos da pesquisa e esclarecimento quanto ao sigilo da identidade dos participantes que participaram, livremente, nesta pesquisa, expondo as suas perceções acerca da qualidade da assistência prestada pelos serviços de saúde, conforme previsto no Consentimento Livre e esclarecido por estes assinados. Seguiu-se a orientação para o desenvolvimento das respostas às questões.

O processo de recolha dos dados foi filmado para armazenamento e análise das informações expressas durante a comunicação investigador – intérprete de Libras entrevistados. Este procedimento visou assegurar a rigorosa análise e interpretação da informação constante nos dados adquiridos aquando do preenchimento das respostas às perguntas. Foram ainda observadas e registradas por meio de filmagem as expressões dos participantes. Cada questionamento teve a duração de aproximadamente 30 minutos. Após o término da aplicação do instrumento de recolha de dados foi solicitado que nos indicassem entre três e seis novos contatos.

Foi obtida autorização explicita para a filmagem por parte dos participantes, sendo-lhe garantido que o material recolhido seria utilizado apenas para fins de pesquisa. O anonimato e confidencialidade no tratamento da informação e divulgação dos resultados foram assegurados com atribuição de um código a cada entrevistado e respetivo material informativo recolhido que variou de S1 a S15.

2.4 Análise de dados

Os dados recolhidos através das questões foram agrupados através da ferramenta do Microsoft Office Excel versão 2007, organizados em Categorias A, B e C, anteriormente, descritas e o conteúdo das questões abertas avaliados segundo a trajetória da análise de conteúdo temático com recurso à análise interpretativa.

O controlo de potenciais vieses associados aos resultados apurados foi efetuada, obtendo a sua validação pelos participantes, dando-lhes assim oportunidade de confrontar os dados anteriormente fornecidos com a interpretação do investigador.

3. RESULTADOS

Satisfação com a Assistência em Saúde

A maioria dos participantes (86,7%) declararam-se muito insatisfeito com a comunicação dos funcionários, 80% referiram ausência de materiais informativos e educativos. Houve variação na perceção quanto à pontualidade no agendamento das consultas, marcação e entrega de exames em que 46,7% positivo (somatório dos scores 1 e 2) enquanto 53,3% demonstram nível de satisfação negativo (somatório dos scores 3 e 4). Este resultado reflete possível desigualdade na assistência à saúde entre os serviços. (Tabela 1).

Tabela 1 - Satisfação com a assistência em saúde

Nível de satisfação	O atendimento dos funcionários			A pontualidade no agendamento das consultas, marcação e entrega de exames.			A disponibilidade de placas informativas e material educativo em Libras		
	Masc. n=10 100 %	Fem. n=5 100%	Total n =15 100%	Masc. n=10 100%	Fem. n=5 100%	Total n=15 100%	Masc. n=10 100 %	Fem. n =5 100%	Total n =15 100%
Muito Satisfeito (1)	- 0,0	- 0,0	- 0,0	1 10	- 0,0	1 6,7	- 0,0	- 0,0	- 0,0
Satisfeito (2)	- 0,0	- 0,0	- 0,0	4 40	2 40	6 40	- 0,0	- 0,0	- 0,0
Insatisfeito (3)	2 20	- 0,0	2 13,3	1 10	2 40	3 20	2 20	1 20	3 20
Muito Insatisfeito (4)	8 80	5 100	13 86,7	4 40	1 20	5 33,3	8 80	4 80	12 80

Quando questionados sobre a qualidade da assistência quanto à estrutura, as respostas mantiveram-se no nível de insatisfação elevado: 60% estão insatisfeitos com as estruturas físicas, ao contrário de 33,3% que as consideram satisfatória.
Foram avaliados na sua maioria com *"muito insatisfeito"* os seguintes aspetos: o acesso aos serviços especializados (66,6%) e a disponibilidade de medicamentos ou materiais e a parca presença do intérprete ambos com 33,3%.
A variação do nível de satisfação em relação à estrutura física poderá ser motivada pelas mudanças arquitetónicas ocorridas nos últimos anos e a construção das novas unidades básicas de saúde dentro dos padrões estabelecidos comparativamente com outras em que o cumprimento dos requisitos legais ainda não ocorreu.

Tabela 2 - Satisfação relativa à qualidade da assistência quanto à estrutura e serviços especializados

Nível de Satisfação	A apresentação da estrutura física (ventilação, iluminação, higiene e quantidade) da recepção, consultórios, banheiros.						O acesso a serviço ou atendimento especializado					
	Masc.		Fem.		Total		Masc.		Fem.		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Muito Satisfeito (1)	-	0,0	1	20	1	6,7	-	0,0	-	0,0	-	0,0
Satisfeito (2)	4	40	1	20	5	33,3	4	40	1	20	5	33,3
Insatisfeito (3)	2	20	2	40	4	26,7	3	30	2	40	5	33,3
Muito Insatisfeito(4)	4	40	1	20	5	33,3	3	30	2	40	5	33,3

Satisfação relativa à qualidade da assistência em instituições privadas
Houve relatos de atendimentos um pouco mais qualificados entre os profissionais dos serviços privados. De acordo com S3 o pagamento pelos serviços dá mais garantia de melhor atendimento. Para S3 e S14, ao avaliar o atendimento do serviço público, comentaram que o desrespeito é evidente mesmo tendo explicado serem Surdos foram abordados com indiferença.
"Não vou ao posto, pago consulta, atende melhor (S3)". "Tem médico que atende bem, tem médico que não... depende de … (S14)".

4. DISCUSSÃO

Inicia-se a discussão pela análise das opções metodológicas da pesquisa. Salienta-se que a partilha de resultados sobre um tema onde existe lacuna de conhecimentos, tendo por base a perceção das pessoas surdas, é uma implicação positiva da investigação qualitativa. Contudo as implicações e impacto do estudo importam à esfera social da singularidade do contexto estudado, porquanto não obstante se apresentarem argumentos teóricos que suportam os principais resultados, deverão ser também tidas em conta as limitações subjacentes às opções metodológicas e de investigação de natureza qualitativa, designadamente **n** da amostra selecionada. Ressalva-se como elemento positivo o recurso a intérpretes certificados (critério de seleção) para controlo de vieses associados ao processo de comunicação, validação dos dados interpretados a partir dos participantes (pessoas surdas). Salienta-se ainda o estatuto de controlo atribuído às filmagens ocorridas durante o processo de recolha de dados, visando por essa via aportar rigor aos dados obtidos e às subsequentes inferências investigativas.
Discorre-se, seguidamente, sobre o facto de as pessoas surdas necessitarem de uma maior atenção, dada a barreira na comunicação com a sociedade ouvinte que vem se configurando como um risco para a saúde nesta população (França, 2011).
Apesar de terem os seus direitos garantidos por lei, tal fato parece não acontecer na nossa amostra, pois a maioria dos participantes declararam-se muito insatisfeitos com a comunicação dos funcionários, referiram ausência de materiais informativos e educativos estavam insatisfeitos com a pontualidade no agendamento das consultas, marcação e entrega de exames.
Além disso, o uso de outros recursos para a comunicação com a população em estudo foi considerado inadequado o que os expõem a riscos eminentes no diagnóstico e consequentes condutas erróneas no tratamento (Araújo et al., 2015).

Na relação serviço-paciente a impreparação dos profissionais ao lidar com população surda é preocupante e evidenciada na falta de humanismo e respeito pela singularidade da pessoa surda e no direcionamento ao acompanhante para recolha de informações sobre o estado de saúde do utente, como se constatou no discurso de S9.

Tal facto corrobora a influência da ideologia normativa nas relações interpessoais entre os profissionais e a pessoa surda, descrita por McDonnell (2016), observada no comportamento hostil em resposta à não adequação dos Surdos há sociedade ouvinte e na falta de consideração das habilidades intelectuais e promoção da autonomia / independência. *"Tudo rápido, fala com o acompanhante, dá receita e chama outro" (S9).*

O desconhecimento da língua de sinais pelos profissionais da saúde gera, na maioria das vezes, desconforto na comunicação entre ambas as partes e uma dependência dos usuários em relação aos familiares e intérpretes, comprometendo por essa via o respeito à equidade durante o atendimento (Vianna et al., 2014).

Sem acesso a uma comunicação de qualidade, as pessoas surdas aquando da ausência de familiares durante as consultas, veem-se frequentemente obrigadas a contratarem intérpretes em consequência do despreparo dos profissionais ou da indisponibilidade destes nos serviços de saúde. Dessa forma, observa-se o não cumprimento dos princípios da universalidade evidenciada pela falta de recursos informativos, bem como do da equidade evidenciada na comunicação precária (Costa et al, 2009), como especificamente colocado por S5. *"Não tem intérprete, a gente paga toda vez. Não sabe falar com Surdo* (S5)".

Se por um lado a comunicação é crucial para um melhor atendimento das necessidades de saúde, as instalações físicas também o são, porque tanto a comunicação como o ambiente físico devem propiciar condições terapêuticas favoráveis aos clientes. Pois, a oferta dos serviços de saúde dentro de uma estrutura física condizente, favorece tanto o acolhimento da clientela como possibilita um melhor desempenho do trabalho dos profissionais (Medeiros, Souza, Barbosa & Costa, 2010).

Porém, neste estudo, houve registo de insatisfação dos participantes em torno desta dimensão, refletindo fragilidade no princípio da equidade em decorrência da precariedade na ambiência, como relatado por S1, S2 e S8. *"A gente mostra que é Surdo e ficam rindo, não dão valor, faz sinal para esperar. Respeitam os direitos dos Surdos não. Chama como ouvinte. Agente espera sem saber se passou a vez (S1)". "Lugar quente (S2)". "Posto pequeno, muita gente... quente, quente (S8)".*

Resultado semelhante foi também observado por Castro et al. (2011), concluindo os autores que as deficiências relatadas pelos portadores de deficiência violavam o princípio da equidade.

No que reporta ao princípio da integralidade, observou-se uma aproximação dos níveis de satisfação entre os participantes no que se refere à quantidade de medicamentos disponíveis nos serviços, o acesso ao atendimento especializado e a apresentação da estrutura física, que podem estar associados às desigualdades existentes nas ofertas das assistências prestadas, como também a possíveis construções de espaços físicos adequados aos padrões estabelecidos pelas normas técnicas vigentes.

Por último, os resultados evidenciam incumprimento dos princípios do SUS, tendo como pontos fracos cruciais, a falta de comunicação adequada e a precariedade do ambiente clínico, tão importante para o desempenho de uma assistência voltada para a promoção da saúde e qualidade de vida da população em geral e da surda no que tange às particularidades assistenciais específicas que se almejam inclusivas.

CONCLUSÕES

A barreira linguística observada entre as pessoas surdas e ouvintes caracteriza-se como uma das principais dificuldades enfrentadas pelos Surdos no quotidiano das sociedades hodiernas.

Utilizou-se como parâmetro de avaliação da perspetiva deste grupo de pessoas, a compreensão do acesso à informação, a qualidade da assistência e das consultas com correlação aos princípios da universalidade, da integralidade e da equidade do Sistema Único de Saúde (SUS) vigente no Brasil.

A colaboração de um intérprete certificado no processo de comunicação, validação dos dados interpretados a partir dos participantes (pessoas surdas) foi assumida como uma estratégia metodológica para imprimir rigor na recolha e tratamento dos dados, contudo a presença do mesmo, constitui igualmente uma fonte hipotética de limitação associada ao risco de vieses no controlo dos resultados.

Emerge salientar que a perceção da pessoa surda sobre a qualidade das ações e serviços de saúde prestados justifica a realização deste estudo, cuja abordagem de cariz qualitativo permitiu apurar o olhar dos participantes desta investigação sobre um importante indicador para avaliação da fragilidade na assistência à saúde.

O presente estudo permitiu responder às questões de investigação, tendo-se constatado que os participantes demostram estar conscientes sobre o incumprimento do direito ao acesso à saúde de forma igualitária, equânime e integral, pois manifestam elevado nível de insatisfação face à qualidade das ações e serviços prestados nas unidades de saúde.

Verificou-se também que pouca preparação para comunicar com os usuários Surdos se manifesta no défice de comunicação entre os prestadores de serviços e os usuários Surdos, bem como a indisponibilidade de recursos informativos ou educativos aliados à contratação de intérpretes diretamente pelos pacientes Surdos para o atendimento das suas necessidades. Tal reflete inoperância das políticas de saúde vigentes e um desvio da responsabilidade do Estado, no que tange à seguridade do acesso pleno aos serviços de saúde sem perdas ou danos para esta população específica.

Ficou patente que a limitação auditiva não prejudicou a compreensão dos usuários quanto à qualidade das ações e serviços de saúde que deveriam ser prestados; pelo contrário, o nível de insatisfação relatado expressa o desafio existente para conseguir o pleno atendimento das pessoas com necessidades específicas motivadas pela surdez, no sistema de saúde público no Brasil. Só assim será possível promover a universalidade, integralidade e equidade dos serviços de saúde às pessoas com necessidades específicas, como é o caso da pessoa surda.

Como reflexões finais sobre a investigação realizada, reitera-se que desde o início da conceptualização do estudo, houve preocupação em desenvolver um trabalho metodológico rigoroso com clarificação das opções tomadas. Apesar desse cuidado, assume-se que que a amostra reduzida constitui uma limitação do presente estudo. De acordo com Cunha-Nunes (2006), estas fragilidades inerentes aos estudos de natureza empírica com matriz transversal seriam evitadas se a amostra fosse maior e se optasse por um estudo de natureza longitudinal, contudo tal não foi possível por limitações de tempo para a sua realização.

Para concluir, sublinha-se que apesar de se ter procurado realizar um estudo compreensivo, existe necessidade de replicação da pesquisa em amostras mais alargada, procurando saber se a tendência dos resultados encontrados se mantém. Estes indicam-nos que um estudo uni-fatorial será demasiado simplista na compreensão desta problemática, emergindo a necessidade de se investigar à luz das abordagens multidimensionais e multifatoriais. Considerando a pessoa surda como um todo biopsicossocial, dotado de identidade cultural e espiritual, ensaiou-se um desenho integrativo que permitisse analisar as tendências assistenciais no Brasil segundo a perspetiva dos usuários com necessidades de assistência especiais, as pessoas surdas. Daí salientarem-se como aspetos positivos do estudo, o aportar informação útil para a compreensão dos múltiplos fatores que influenciam o processo de cuidar em saúde e consequentemente a satisfação com a assistência em saúde e por essa via suscitar a reflexão sobre a qualidade dos serviços de saúde.

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A MUSICOTERAPIA COMO INTERVENÇÃO AUTÓNOMA DE ENFERMAGEM PARA CONTROLO DA DOR EM UCI: REVISÃO INTEGRATIVA

MUSIC THERAPY AS AN AUTONOMOUS INTERVENTION OF NURSES FOR PAIN CONTROL IN ICU: INTEGRATIVE REVIEW

LA MUSICOTERAPIA COMO INTERVENCIÓN AUTÓNOMA DE ENFERMERÍA PARA EL CONTROL DEL DOLOR EN UCI: REVISIÓN INTEGRADORA

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RESUMO

Introdução: Num ambiente tão complexo como o de uma Unidade de Cuidados Intensivos (UCI), importa compreender de que forma é que as intervenções de enfermagem, nomeadamente a musicoterapia, podem contribuir para o controlo da dor.

Objetivo: Compreender a relevância da musicoterapia, como intervenção autónoma de enfermagem, no controlo da dor dos doentes internados em UCI's.

Métodos: Revisão integrativa da literatura, através da pesquisa eletrónica na plataforma B-ON e na base de dados eletrónica PubMed, realizada em janeiro de 2016, utilizando os descritores "enfermagem", "música", "dor" e "cuidados intensivos". Foram considerados como critérios de inclusão artigos publicados entre 2011 e 2015, de abordagem qualitativa ou quantitativa, em *full text*, idioma português, espanhol ou inglês, referindo-se a doentes adultos e em cuidados intensivos, obtendo um total de 818 artigos, dos quais sete foram incluídos no estudo.

Resultados: Os estudos obtidos são representativos de um total de 1818 participantes, maioritariamente doentes, de três continentes. Os artigos evidenciaram que a musicoterapia tem eficácia no controlo da dor, mediante as preferências musicais, o tipo de música e o volume da mesma.

Conclusões: A musicoterapia é uma intervenção autónoma de enfermagem, que pode ser utilizada como intervenção não farmacológica, no controlo da dor, em doentes com necessidades específicas inerentes a uma UCI.

Palavras-chave: Música; Dor; Cuidados Intensivos; Enfermagem

ABSTRACT

Introduction: In an environment as complex as an Intensive Care Unit (ICU), it is important to understand how nursing interventions, such as music therapy, can contribute to pain control.

Objective: To understand the relevance of music therapy, as an autonomous nursing intervention, in controlling the pain of patients hospitalized in ICU's.

Methods: Integrative review of the literature, through the electronic research on the B-ON platform and the PubMed electronic database, conducted in January 2016, using the descriptors "nursing", "music", "pain" and "intensive care". Inclusion criteria were articles published between 2011 and 2015, with a qualitative or quantitative approach, in *full text*, Portuguese, Spanish or English, referring to adult patients and in intensive care unit, obtaining a total of 818 articles of which seven were included in the study.

Results: Obtained studies are representative of a total of 1818 participants, mostly patients, from three continents. The articles showed that music therapy is effective in controlling pain, through musical preferences, the type of music and the volume of the music.

Conclusions: Music therapy is an autonomous nursing intervention that can be used as a non-pharmacological intervention in pain control in patients with specific needs inherent to an ICU.

Keywords: Music; Pain; Intensive Care; Nursing

RESUMEN

Introducción: En un entorno tan complejo como el de una Unidad de Cuidados Intensivos (UCI), es importante entender cómo intervenciones de enfermería, incluyendo la musicoterapia, pueden ayudar a controlar el dolor.

Objetivo: Entender la importancia de la musicoterapia, como una intervención independiente de enfermería en el tratamiento del dolor de pacientes admitidos a UCI's.

Métodos: Revisión integradora de la literatura a través de la búsqueda electrónica en la plataforma B-ON y base de datos electrónica PubMed, que tuvo lugar en enero de 2016, utilizando los descriptores de "enfermería", "música", "dolor" y "cuidados intensivos". Se consideraron como criterios de inclusión artículos publicados entre 2011 y 2015, con enfoque cualitativo o cuantitativo, en texto completo, idioma portugués, español o inglés, en referencia a adultos en cuidados intensivos, obteniendo un total de 818 artículos, de los cuales siete fueron incluidos en el estudio.

Resultados: Los estudios obtenidos son representativos de un total de 1818 participantes, en su mayoría pacientes, de tres continentes. Los artículos demostraron que la musicoterapia es eficaz en el control del dolor a través de las preferencias musicales, el tipo de música y el volumen de la misma.

Conclusións: La musicoterapia es una intervención de enfermería autónoma, que puede ser utilizada como una intervención no farmacológica en el control del dolor en pacientes con necesidades específicas inherentes a la UCI.

Palabras Clave: Música; Dolor; Cuidados Intensivos; Enfermería

INTRODUCTION

When it came to the realization that pain management is inadequate in most parts of the world, the Montreal Declaration was published in 2011 by the International Association for the Study of Pain (IASP), which states that pain control is a fundamental human right (International Pain Summit of the International Association for the Study of Pain, 2011).

According to the Classificação Internacional para a Prática de Enfermagem (CIPE®), pain is understood as a "compromised perception: increase of uncomfortable body sensation, subjective reference of suffering, characteristic facial expression, alteration of muscle tone, self-protection behavior, limitation of focus of attention, alteration of the perception of time, escape of social contact, process of thought compromised, behavior of distraction, restlessness and loss of appetite " (Conselho Internacional de Enfermeiros, 2016, p. 56).

Also, IASP (Merskey & Bogduk, 1994) presents a definition for this concept referring to pain as an unpleasant sensation, involving not only a sensory component, but also an emotional component, associated with actual or potential tissue damage, or described in function of that damage.

The European Pain Federation also adds that it consists of a personal perception arising in a conscious brain, typically in response to a provocative nonoxic stimulus, but sometimes in the absence of a stimulus. The relationship between perception and stimulus is variable, depending on the individual's expectations and beliefs, on his cognitive and emotional state, and not just on the nature of the stimulus (European Pain Federation, nd).

According to Chlan and Halm (2013) uncontrolled pain induces a generalized sympathetic response (increases heart rate, blood pressure, respiratory rate and peripheral resistance), causes sleep and appetite disorders, as well as increases anxiety, which in turn also increases the perception of pain, and all these symptoms interfere with the recovery process.

The Plano Estratégico Nacional de Prevenção e Controlo da Dor (PENPCDor), approved in 2013, goes even further by saying that the socioeconomic repercussions of pain are significant because of the costs involved in frequent use of health services and treatment costs. It also reiterates that indirect costs are also very high, particularly in terms of lost productivity, compensation and subsidies (Portugal, Ministério da Saúde, Direção Geral da Saúde, 2013).

DGS (Portugal, Ministério da Saúde, Direção Geral da Saúde, 2003, p.6) considers intensive care as "places qualified to take full responsibility for patients with organ dysfunction, supporting, preventing and reversing bankruptcies with vital implications."

According to Puntillo & et al (2014), the critical patient often experiences anxiety, pain and discomfort as part of their ICU hospitalization, which may result from their own illness or from the care provided by the professionals. The patient admitted to an ICU is a patient particularly susceptible to pain, and the aforementioned authors even point out that the majority of those who were critically ill recall pain experiences.

The challenge will then be to find ways to reduce stress-inducing experiences in an ICU. Within the scope of its competencies in the fields of professional, ethical, legal and professional development, and taking into account that nurses are the professionals who are closest to patients, the use of autonomous nursing interventions in pain control and thus provide patient satisfaction, well-being and self-care (Ordem dos Enfermeiros, 2001).

It is therefore crucial to determine strategies other than pharmacological strategies that can complement pain management and be managed by nurses autonomously.

If we look back, we can conclude that in recent years there has been an increase in the use of complementary therapies and, since nurses are the health professionals who have more contact with patients, it would be important for us to provide them with knowledge about these therapies in order to provide even better health care and in a holistic way, taking into account the physical, psychological, social and emotional level.

Several authors describe the benefits of complementary therapies, such as having few or no side effects, possibility of control and involvement in the treatment decision-making process, and less invasive techniques. According to Cassileth and Gubili (2010) complementary therapies can act through direct analgesic effects (eg acupuncture), an anti-inflammatory action (eg plants) or by distraction (eg music), with the objective of altering The perception of pain and reduce this symptom, as well as helping to relax, improve sleep or reduce vomiting, anxiety, depression, nausea and neuropathy. For these same authors, when complementary therapies are used in conjunction with a pharmacological regimen, it is possible to improve efficacy and reduce costs. Chlan and Halm (2013) argue that these therapies can be used to reduce stress / anxiety and pain, among others.

Cassileth and Gubili (2010) point out that music can achieve deep emotional levels, and certain types of music can have special meanings individually, and the use of it can alleviate pain.

Thorp and James (2010) further add that music can be particularly beneficial if it is chosen by the patient and appreciated with headphones, rather than added to the background noise of the ICU.

In the opinion of some authors, nurses daily dedicate some time and energy to implementing interventions that improve patient comfort. These interventions can be interdependent, which are carried out in multidisciplinary teams in favor of a common objective or autonomous interventions that are carried out under the sole and exclusive initiative and responsibility of the nurses, according to the Regulamento para o Exercício Profissional de Enfermagem (REPE) (Ordem dos Enfermeiros, 1996).

Cole and LoBiondo-Wood (2014) assume the use of music as a safe, cost-free practice and autonomous intervention that nurses can easily incorporate into patient care routines.

The concept of nursing presented in REPE corroborates this idea, since it affirms that it is a profession with the objective of "providing nursing care to the human being, are or sick, throughout the life cycle, and social groups in which It is integrated in a way that maintains, improves and regains health by helping them reach their full functional capacity as quickly as possible" (Ordem dos Enfermeiros, 1996).

Taking into account these premises, the nurse should, therefore, select the non-pharmacological interventions considering the person's preferences, treatment objectives and available scientific evidence
(Ordem dos Enfermeiros, 2008).

This raises the need to understand and reflect on the possibility of music therapy being a potential autonomous nursing intervention for the control of the pain of patients admitted to intensive care. In view of the aforementioned, we outline the following research question: What is the relevance of music therapy, as an autonomous nursing intervention, in controlling the pain of people hospitalized in ICUs?

1. METHODS

An integrative literature review was carried out, which is a method that allows the inclusion of several methodologies and has the potential to be a fundamental determinant in evidence-based practice for nursing, since these reviews can present a summary of current problems (Whittemore & Knafl, 2005).

Based on the question above research and taking into account the knowledge that it was intended to summarize, there was a search using the Health Sciences Descriptors - DeCS (compatible with *Medical Subject Headings* - MeSH): music, pain, intensive care and nursing.

Through the association of these descriptors, through the B-ON platform (in the databases CINAHL Plus with Full Text, ScienceDirect, Academic OneFile, SPORTDiscus with Full Text, General OneFile, Expanded Academic ASAP, Business Source Complete, Nursing Reference Center, MEDLINE, Science Citation Index, Social Sciences Citation Index, Informit Health Collection, Science In Context, Health News, LexisNexis Academic, Law Reviews, Scopus, TDX and Literature Resource Center) and PubMed electronic database.

Boolean characters were used to conjugate the different descriptors, and the expression used was (music) AND (pain) AND (intensive care) AND (nursing) NOT (child* OR adolescent* OR infant*).

As for the period of search of the articles, it comprised the first two weeks of January, 2016.

We established as inclusion criteria studies that give response to objective, published between 2011 and 2015 in *full text,* qualitative and quantitative approach and available in Portuguese, English and Spanish. They would have to refer to adult patients and be studies of patients admitted to intensive care.

The research conducted led to an initial sample of 818 scientific studies. Of these, 237 were excluded by repetition, 539 by title and 13 by summary resulting from this process a sample of 29 articles. After reading these 29 studies, 22 were excluded due to inadequacy of the inclusion / exclusion criteria. In Figure 1, the selection process of the included studies is presented as a diagram.

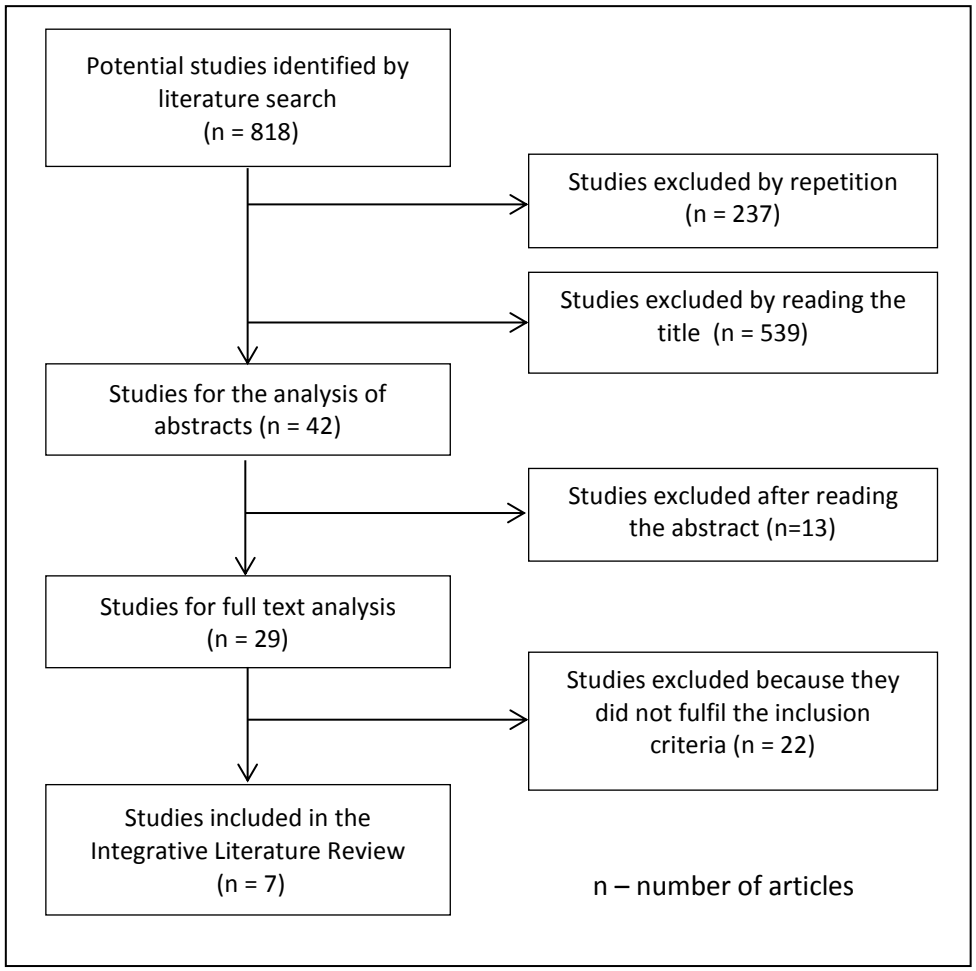

Figure 1 - Selection process of included studies

The seven papers selected were analyzed in order to answer the research question defined for this study. The data were extracted from the articles in order to obtain information about the country and context where the study was carried out, the period during which it was carried out, objectives and study design, number and type of participants, results obtained and conclusions drawn.

2. RESULTS AND DISCUSSION

The seven primary studies that met the pre-defined inclusion criteria are presented in table 1, including the author (s), year, country, objectives, sample, methodology and main results of each article.

Table 1 – Summary of evidence found

N. º	Author(s) / Year / Country	Objetives	Sample	Methodology	Results / Conclusions
E1	Jafari, H. Zeydi, A. E. Khani, S. Esmaeili, R. Soleimani, A. 2012 Iran	What are the effects of music in pain intensity, in the patient undergoing cardiac surgery.	N = 60 patients undergoing cardiac surgery 30 listened to the favorite song and 30 formed the control group.	Randomized clinical trial.	Audition of preferred music has benefits in controlling pain. It is a simple, effective and economically accessible intervention.
E2	Gélinas, C. Arbour, C. Michaud, C. Robar, L. Côté, J. 2013 Canada	Describe the perspectives of patients, the family and nurses about the relevance of the use of non - pharmacological interventions for pain control, namely music.	N = 38 32 nurses, with at least two years in an ICU, four transplanted patients who had been hospitalized in the last two years in an ICU and two relatives of ICU patients.	Descriptive qualitative study with eight *focus group.*	The music is useful and feasible for the control of pain. It varies depending on whether or not the patient likes the music you are listening to.
E3	Özer, N. Ozlu, Z. K. Arslan, S. Gunes, N. 2013 Italy	To investigate the effect of music in the intensity of pain in patients undergoing cardiac surgery.	N = 87 patients undergoing cardiac surgery. Convenience sampling in which 44 were the experimental group and 43 were the control group.	Experimental study conducted from September 15, 2007 to February 15, 2008.	There is evidence supporting the use of music to reduce pain.
E4	Faigeles, B. *et al.* 2013 USA	Describe the pain of the patient during position change, according to the demographic and clinical variables, determining the use of non - pharmacological interventions.	N = 1395 patients from 169 hospitals, where 65.9% were in an ICU.	Quantitative correlational observational study.	Although music not have been the most sought intervention among non-pharmacological interventions, it was concluded that the use of this is effective for managing pain.
E5	Aktas, Y. Y. Karabulut, N. 2015 Turkey	To determine the effect of music in pain intensity and level of sedation in patients undergoing cardiac surgery during endotracheal aspiration of patients with mechanical ventilation.	N = 66 patients undergoing cardiac surgery. The first 33 submitted to surgery constituted the experimental group and the remaining 33, the control group.	Experimental study from August 2012 to January 2013.	The music is an effective practice to reduce pain in patients undergoing mechanical ventilation suction. It is an independent and independent practice of nurses.
E6	Liu, Y. Petrino, M. A. 2015 China	Investigate the efficiency of music for managing pain, anxiety and vital signs, the patient cardiac surgery.	N = 112 patients 56 were the experimental group and were chosen on odd days and the 56 of the control group on even days.	Randomized trial from November 2013 to March 2014.	The results showed that music decreases the intensity of pain, anxiety, systolic blood pressure and heart rate.
E7	Saadatmand, V. Rejeh, N. Heravi-Karimooi, M. Tadrisi, S. D. Vaismoradi, M. Jordan, S. 2015 United Kingdom	To study the effect of natural sounds in pain intensity of patients with mechanical ventilate support.	N = 60 patients receiving mechanical support. Randomly, 30 were the experimental group and the other 30 were the control group.	Randomized controlled trial from October 2011 to June 2012.	The music is an autonomous and independent nursing intervention. Listening to music decreases pain levels.

The articles were mostly published in 2013 and 2015 and are framed in the quantitative paradigm, using as a data collection tool the questionnaire, but one of the studies, namely E2, falls within the qualitative paradigm. Recent studies show that this is a current and pertinent issue.

The papers selected represent a total sample of 1818 people (mostly ill but also family members and nurses) from three different continents, America, Europe and Asia, which reinforces the credibility of this review as it covers different cultures, traditions and customs.

The main objectives of these articles are the need to understand how a non-pharmacological intervention, in this case music therapy, can be effective in the control of pain, in patients requiring intensive care or care in an ICU, such as (E4), aspiration of secretions (E5), invasive mechanical ventilation (E7), cardiac postoperative (E1, E3 and E6), among others. It should be noted that one of the studies (E2) aimed to describe the perspectives patients, relatives and nurses had regarding non-pharmacological interventions, concluding that music therapy is useful and viable, but varies according to patients' musical tastes.

For the statistical analysis, the authors used different statistical tests using SPSS (E3, E4, E5, E6 and E7), varying the applied tests, from the chi-square (E4, E5 and E6), t-test (E4, E4, E5, E6 and E7), descriptive statistics (E6), multivariate logistic regression models (E4), t-student (E1), one- , GEE analysis (E6) and Kolmogorov-Smirnov (E7) approach. One of the authors (E2) had to use transcription and evaluation of audio tapes as a method of analysis for subsequent code creation and classification of non-pharmacological interventions according to the Nursing Intervention Classification (NIC).

For Chlan and Halm (2013) music functions as a powerful distractor that can be used to occupy the brain channels with a pleasant stimulus rather than a sign of pain or anxiety producing thoughts. If there is a possibility, patients should be able to choose the songs they prefer to listen to, since different symptoms may require different genres of music, varying also if the patient wants a simple distraction or a relaxation.

For these same authors music has immediate benefits and can be safely implemented as a complement to care planning. Thus, music therapy emerges as another way for nurses to make a difference in delivering excellence care to critical patients.

Hetland, Lindquist and Chlan (2015) refer as results of their literature review the fact that critical patients have memories of pain, anxiety and discomfort and that for many music can be a happy memory among many other traumatic memories. Some studies have mentioned that music was considered an aid most of the time when all patients would participate again in an intervention with music.

Kramlick (2014) points out that it can be challenging to implement complementary therapies in intensive care due to space constraints, the presence of many equipment and frequent interventions. However, through the articles studied, it can be seen that this type of intervention can be perfectly feasible in an ICU, since it does not cause any alterations in the physical structures and does not interfere with the existing ones. We verify in all studies that there is pain control when using the music, even decreasing the intensity of the same.

It should be noted that for Gélinas, Arbor, Michaud, Robar and Côte (2013) music therapy was seen as potentially useful by nurses for the treatment of patients who were able to select their own music, but this was not considered an ideal approach for those who cannot communicate their musical preferences.

As mentioned in the PENPCDor (Portugal, Ministério da Saúde, Direção Geral de Saúde, 2013), the high prevalence of pain and the transversality of its approach by health professionals, particularly physicians and nurses, should lead to adequate training, which should be pre-graduated period and be continually deepened and updated. This plan even emphasizes that health professionals should adopt pain prevention and control strategies, contributing to the well-being, reducing morbidity, and humanizing patient care.

In this way, Cassileth and Gubili (2010) argue that when complementary therapies, as in the case of music therapy, work in synergy with a pharmaceutical regimen for pain, it is possible to improve effectiveness and reduce costs, once music reaches deep emotional levels and certain types of music can have special meanings for each person.

Hetland, Lindquist and Chlan (2015) report that the evidence points to music therapy as an effective intervention to minimize symptoms related to mechanical ventilation and that promotes gains and is therefore a potential intervention to reduce costs and increase patient satisfaction. Moreover, Jafari, Zeydi, Khani, Esmaeili and Soleimani (2012) demonstrated in their study that there are beneficial effects in the use of preferred music to control pain after surgery while patients are hospitalized in the ICU. They further argue that listening to music is a simple, inexpensive intervention that can simply be provided by a music player and headphone reader, thus recommending the extensive use of music therapy in patients undergoing open heart surgery to lead to pain reduction in the postoperative.

In their study, Aktas and Karabulut (2015) demonstrated that music therapy is a practice with results in reducing pain and in controlling levels of sedation in patients with mechanical ventilation during endotracheal aspiration and that it is a noninvasive nursing intervention without expenses and without side effects.

We corroborate the opinion of the aforementioned authors when they report that more studies are needed to prove the gains of music use during mechanical ventilation and other procedures, since although these seven studies obtain the same conclusion, which proves the efficacy and efficiency of music in the control of pain in patients with intensive care needs, it is

important to study this issue further. This is considered a very pertinent fact, not only because it is an autonomous intervention of nursing, but also because it is an intervention without costs and has proved to be efficient and effective in the control of pain.
In three of the seven articles (E2, E5 and E7) it is verified that music therapy can and should appear as an autonomous nursing intervention for the control of pain. After collecting the patient's musical preferences, adjusting the volume of the song and adjusting the timing of the intervention implementation, the results were found to be favorable.
According to the Regulamento dos Padrões de Qualidade dos Cuidados Especializados em Enfermagem em Pessoa em Situação Crítica (Ordem dos Enfermeiros, 2011, p. 4-6), the nurse specialist in medical and surgical nursing has considered as competencies the "differentiated and effective management of pain with the implementation of pain assessment instruments and therapeutic protocols - pharmacological and non-pharmacological measures - for pain relief "," precise, efficient, timely, effective and holistic intervention in relation to the critically ill person "and" as quickly as possible, of potential client problems for which nurses are competent to prescribe, implement and evaluate interventions that contribute to avoiding or minimizing undesirable effects. " Therefore, nurses who are specialists in medical-surgical nursing, besides being able to apply the intervention itself, as well as generalist nurses, can still manage and supervise the implementation of protocols or procedures.
In light of the scientific evidence, it is possible to conclude that music is an autonomous effective nursing intervention in the control of pain in adult patients hospitalized in ICU.

CONCLUSIONS

The main results obtained show that music therapy is effective in controlling pain in patients with specific needs inherent to an ICU. Different authors affirm that music is effective in controlling pain, as well as other vital signs; however, the results of this intervention vary according to the types of music used, the musical preferences of the patient, as well as the volume of the same.
There are many unpleasant and painful nursing procedures for patients, such as those associated with mechanical ventilation, postoperative, positioning, aspiration of secretions, among others, in which music emerges as an independent and independent practice of nursing. Nursing, which can be used as a non-pharmacological strategy for pain management.
Through this analysis it was found that the use of music is useful in reducing pain and in However, it would be pertinent to invest in further studies in order to corroborate the use of music as an autonomous activity of the nurse.
In the final analysis, and since the use of music as a non-pharmacological therapeutic measure is still at an early stage of dissemination and use, the opportunity should be seized for its practice to be regulated and regulated; this regulation, through the Order of Nurses could be embodied in the skills of the specialist nurse.
However, in the first place it is imperative to modify mentalities, attitudes and policies of the services and institutions, in order to guarantee the conditions of the use of music as an autonomous nursing activity.

It is part of the competencies of nurses to provide nursing care in order to maintain, improve and recover the patient's health. Pain control is a duty of the nurse and it is therefore essential that the nurse is able to select non-pharmacological interventions, taking into account patients' preferences and the objectives to be achieved, taking into account the current scientific evidence.

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A MUSICOTERAPIA COMO INTERVENÇÃO AUTÓNOMA DE ENFERMAGEM PARA CONTROLO DA DOR EM UCI: REVISÃO INTEGRATIVA

MUSIC THERAPY AS AN AUTONOMOUS INTERVENTION OF NURSES FOR PAIN CONTROL IN ICU: INTEGRATIVE REVIEW

LA MUSICOTERAPIA COMO INTERVENCIÓN AUTÓNOMA DE ENFERMERÍA PARA EL CONTROL DEL DOLOR EN UCI: REVISIÓN INTEGRADORA

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RESUMO

Introdução: Num ambiente tão complexo como o de uma Unidade de Cuidados Intensivos (UCI), importa compreender de que forma é que as intervenções de enfermagem, nomeadamente a musicoterapia, podem contribuir para o controlo da dor.

Objetivo: Compreender a relevância da musicoterapia, como intervenção autónoma de enfermagem, no controlo da dor dos doentes internados em UCI's.

Métodos: Revisão integrativa da literatura, através da pesquisa eletrónica na plataforma B-ON e na base de dados eletrónica PubMed, realizada em janeiro de 2016, utilizando os descritores "enfermagem", "música", "dor" e "cuidados intensivos". Foram considerados como critérios de inclusão artigos publicados entre 2011 e 2015, de abordagem qualitativa ou quantitativa, em *full text*, idioma português, espanhol ou inglês, referindo-se a doentes adultos e em cuidados intensivos, obtendo um total de 818 artigos, dos quais sete foram incluídos no estudo.

Resultados: Os estudos obtidos são representativos de um total de 1818 participantes, maioritariamente doentes, de três continentes. Os artigos evidenciaram que a musicoterapia tem eficácia no controlo da dor, mediante as preferências musicais, o tipo de música e o volume da mesma.

Conclusões: A musicoterapia é uma intervenção autónoma de enfermagem, que pode ser utilizada como intervenção não farmacológica, no controlo da dor, em doentes com necessidades específicas inerentes a uma UCI.

Palavras-chave: Música; Dor; Cuidados Intensivos; Enfermagem

ABSTRACT

Introduction: In an environment as complex as an Intensive Care Unit (ICU), it is important to understand how nursing interventions, such as music therapy, can contribute to pain control.

Objective: To understand the relevance of music therapy, as an autonomous nursing intervention, in controlling the pain of patients hospitalized in ICU's.

Methods: Integrative review of the literature, through the electronic research on the B-ON platform and the PubMed electronic database, conducted in January 2016, using the descriptors "nursing", "music", "pain" and "intensive care". Inclusion criteria were articles published between 2011 and 2015, with a qualitative or quantitative approach, in *full text*, Portuguese, Spanish or English, referring to adult patients and in intensive care unit, obtaining a total of 818 articles of which seven were included in the study.

Results: Obtained studies are representative of a total of 1818 participants, mostly patients, from three continents. The articles showed that music therapy is effective in controlling pain, through musical preferences, the type of music and the volume of the music.

Conclusions: Music therapy is an autonomous nursing intervention that can be used as a non-pharmacological intervention in pain control in patients with specific needs inherent to an ICU.

Keywords: Music; Pain; Intensive Care; Nursing

RESUMEN

Introducción: En un entorno tan complejo como el de una Unidad de Cuidados Intensivos (UCI), es importante entender cómo intervenciones de enfermería, incluyendo la musicoterapia, pueden ayudar a controlar el dolor.

Objetivo: Entender la importancia de la musicoterapia, como una intervención independiente de enfermería en el tratamiento del dolor de pacientes admitidos a UCI's.

Métodos: Revisión integradora de la literatura a través de la búsqueda electrónica en la plataforma B-ON y base de datos electrónica PubMed, que tuvo lugar en enero de 2016, utilizando los descriptores de "enfermería", "música", "dolor" y "cuidados intensivos". Se consideraron como criterios de inclusión artículos publicados entre 2011 y 2015, con enfoque cualitativo o cuantitativo, en texto completo, idioma portugués, español o inglés, en referencia a adultos en cuidados intensivos, obteniendo un total de 818 artículos, de los cuales siete fueron incluidos en el estudio.

Resultados: Los estudios obtenidos son representativos de un total de 1818 participantes, en su mayoría pacientes, de tres continentes. Los artículos demostraron que la musicoterapia es eficaz en el control del dolor a través de las preferencias musicales, el tipo de música y el volumen de la misma.

Conclusións: La musicoterapia es una intervención de enfermería autónoma, que puede ser utilizada como una intervención no farmacológica en el control del dolor en pacientes con necesidades específicas inherentes a la UCI.

Palabras Clave: Música; Dolor; Cuidados Intensivos; Enfermería

INTRODUÇÃO

Aquando da constatação de que a gestão da dor é inadequada na maior parte do mundo, foi publicada em 2011, pela International Association for the Study of Pain (IASP), a Declaração de Montréal que afirma que o controlo da dor é um direito humano fundamental (International Pain Summit of the International Association for the Study of Pain, 2011).

Segundo a Classificação Internacional para a Prática de Enfermagem (CIPE®) a dor é entendida como uma "perceção comprometida: aumento de sensação corporal desconfortável, referência subjetiva de sofrimento, expressão facial característica, alteração do tónus muscular, comportamento de autoproteção, limitação do foco de atenção, alteração da perceção do tempo, fuga do contato social, processo de pensamento comprometido, comportamento de distração, inquietação e perda de apetite" (Conselho Internacional de Enfermeiros, 2016, p. 56).

Também a IASP (Merskey & Bogduk, 1994) apresenta uma definição para este conceito referindo-se à dor como uma sensação desagradável, envolvendo não só uma componente sensorial, mas também uma componente emocional, associada a real ou potencial dano tecidular, ou descrita em função desse dano.

A European Pain Federation acrescenta ainda que esta consiste numa perceção pessoal que surge num cérebro consciente, tipicamente em resposta a um estímulo nóxico provocatório, mas por vezes na ausência de estímulo. A relação entre a perceção e o estímulo é variável, depende das expectativas e crenças do indivíduo, do seu estado cognitivo e emocional e não apenas da natureza do estímulo (European Pain Federation, nd).

De acordo com Chlan e Halm (2013) a dor não controlada induz uma resposta simpática generalizada (aumenta a frequência cardíaca, a tensão arterial, a frequência respiratória e a resistência periférica), provoca distúrbios do sono e do apetite, assim como aumenta a ansiedade, a qual por sua vez também aumenta a perceção da dor, sendo que todos estes sintomas interferem com o processo de recuperação.

O Plano Estratégico Nacional de Prevenção e Controlo da Dor (PENPCDor), aprovado em 2013, vai mais longe ao referir que as repercussões socioeconómicas da dor são significativas, devido aos custos envolvidos no recurso frequente aos serviços de saúde e despesas com a terapêutica. Inclusive reitera que os custos indiretos são também muito elevados, nomeadamente no que se refere à perda de produtividade, atribuição de compensações e subsídios (Portugal, Ministério da Saúde, Direção Geral de Saúde, 2013).

A DGS (Portugal, Ministério da Saúde, Direção Geral de Saúde, 2003, p. 6) considera os serviços de cuidados intensivos como "locais qualificados para assumir a responsabilidade integral pelos doentes com disfunções de órgãos, suportando, prevenindo e revertendo falências com implicações vitais".

Segundo Puntillo & et al (2014) o doente crítico frequentemente experiencia ansiedade, dor e desconforto como parte do seu internamento numa UCI, sendo que estes podem advir da sua própria condição de doença ou dos cuidados prestados pelos profissionais. O doente internado numa UCI é um doente particularmente suscetível a dor, sendo que os autores supracitados referem mesmo que a maioria daqueles que foram doentes críticos recordam experiências de dor.

O desafio passará então por encontrar formas de reduzir as experiências indutoras de stress numa UCI. No âmbito das suas competências nos domínios da prática profissional, ética, legal e do desenvolvimento profissional e tendo em consideração que os enfermeiros são os profissionais que estão mais próximos dos doentes, torna-se emergente a utilização de intervenções autónomas de enfermagem no controlo da dor e desta forma proporcionar a satisfação do doente, o bem-estar e o autocuidado (Ordem dos Enfermeiros, 2001).

Por conseguinte, torna-se fulcral determinar outras estratégias, para além das farmacológicas, que possam complementar o controlo da dor e ser geridas por enfermeiros autonomamente.

Se olharmos em retrospetiva, podemos concluir que nos últimos anos tem havido um aumento no uso das terapias complementares e, sendo os enfermeiros os profissionais de saúde que mais contacto têm com os doentes, seria importante que os dotássemos de conhecimento sobre estas terapias de forma a prestarem ainda melhores cuidados de saúde e de forma holística, atendendo ao nível físico, psicológico, social e emocional.

Vários autores descrevem benefícios das terapias complementares, entre eles o facto de terem poucos ou nenhuns efeitos secundários, possibilidade de controlo e envolvimento no processo de tomada de decisão sobre tratamentos e serem técnicas menos invasivas. De acordo com Cassileth e Gubili (2010) as terapias complementares podem atuar através de efeitos analgésicos diretos (ex. acupuntura), de uma ação anti-inflamatória (ex. plantas) ou por distração (ex. música), com o objetivo de alterar a perceção da dor e reduzir este sintoma, assim como ajudar a relaxar, melhorar o sono ou diminuir os vómitos, a ansiedade, a depressão, as náuseas e a neuropatia. Para estes mesmos autores, quando as terapias complementares são usadas em conjunto com um regime farmacológico é possível melhorar a eficácia e reduzir os custos. Chlan e Halm (2013) afirmam que estas terapias podem ser usadas para reduzir o stress/ansiedade e a dor, entre outros.

Cassileth e Gubili (2010) referem que a música consegue alcançar níveis emocionais profundos e, certos tipos de música, podem ter significados especiais individualmente, sendo que o recurso à mesma pode aliviar a dor.

Thorp e James (2010) acrescentam ainda que a música pode ser particularmente benéfica se for escolhida pelo doente e apreciada com auscultadores, em vez de acrescentada ao ruído de fundo da UCI.

Na opinião de alguns autores, diariamente os enfermeiros dedicam algum tempo e energia a implementar intervenções que melhoram o conforto do doente. Estas intervenções podem ser interdependentes, as quais são realizadas em equipas multidisciplinares em prol de um objetivo comum ou intervenções autónomas que são realizadas sob única e exclusiva iniciativa e responsabilidade dos enfermeiros, segundo o Regulamento para o Exercício Profissional de Enfermagem (REPE) (Ordem dos Enfermeiros, 1996).
Cole e LoBiondo-Wood (2014) assumem o uso da música como uma prática segura, sem custos e uma intervenção autónoma que os enfermeiros podem facilmente incorporar nas rotinas de cuidados aos doentes.
O conceito de enfermagem apresentado no REPE corrobora desta ideia, uma vez que afirma que se trata de uma profissão com o objetivo de "prestar cuidados de enfermagem ao ser humano, são ou doente, ao longo do ciclo vital, e aos grupos sociais em que ele está integrado, de forma que mantenham, melhorem e recuperem a saúde, ajudando-os a atingir a sua máxima capacidade funcional tão rapidamente quanto possível" (Ordem dos Enfermeiros, 1996).
Tendo em consideração estas premissas, o enfermeiro deverá, desta forma, selecionar as intervenções não farmacológicas considerando as preferências da pessoa, os objetivos do tratamento e a evidência científica disponível (Ordem dos Enfermeiros, 2008).
Surge assim a necessidade de compreender e refletir sobre a possibilidade de a musicoterapia ser uma potencial intervenção autónoma de enfermagem, para o controlo da dor dos doentes internados em cuidados intensivos. Tendo em conta o supracitado delineamos a seguinte questão de investigação: Qual a relevância da musicoterapia, como intervenção autónoma de enfermagem, no controlo da dor das pessoas internadas em UCIs?

1. MÉTODOS

Realizou-se uma revisão integrativa da literatura, sendo este um método que permite a inclusão de diversas metodologias e tem potencial para ser um determinante fundamental na prática baseada na evidência, para a enfermagem, uma vez que estas revisões podem apresentar um resumo dos problemas atuais em matéria de saúde (Whittemore & Knafl, 2005).
Tendo por base a questão de investigação supramencionada e, tendo em consideração os conhecimentos que se pretendia sintetizar, realizou-se uma pesquisa utilizando os Descritores em Ciências da Saúde - DeCS (compatível com *Medical Subject Headings* - MeSH): música, dor, cuidados intensivos e enfermagem.
Através da associação destes descritores, foi efetuada pesquisa, através da plataforma B-ON (nas bases de dados CINAHL Plus with Full Text, ScienceDirect, Academic OneFile, SPORTDiscus with Full Text, General OneFile, Expanded Academic ASAP, Business Source Complete, Nursing Reference Center, MEDLINE, Science Citation Index, Social Sciences Citation Index, Informit Health Collection, Science In Context, Health News, LexisNexis Academic: Law Reviews, Scopus, TDX e Literature Resource Center) e também na base de dados eletrónica PubMed.
Utilizaram-se carateres boleanos para conjugar os diferentes descritores, sendo que a expressão de pesquisa utilizada foi (music) AND (pain) AND (intensive care) AND (nursing) NOT (child* OR adolescent* OR infant*).
Quanto ao período de busca dos artigos, compreendeu as duas primeiras semanas de janeiro de 2016.
Estabeleceram-se como critérios de inclusão estudos que dessem resposta ao objetivo, publicados entre 2011 e 2015, em *full text*, de abordagem qualitativa e quantitativa e disponíveis nos idiomas português, inglês e espanhol. Teriam que referir-se a doentes adultos e serem estudos realizados com doentes internados em cuidados intensivos.
As pesquisas efetuadas conduziram a uma amostra inicial de 818 estudos científicos. Destes, 237 foram excluídos por repetição, 539 pelo título e 13 pelo resumo resultando deste processo uma amostra de 29 artigos. Após a leitura integral destes 29 estudos foram excluídos 22 por inadequação aos critérios de inclusão/exclusão. Na Figura 1, apresenta-se sob a forma de diagrama o processo de seleção dos estudos incluídos.

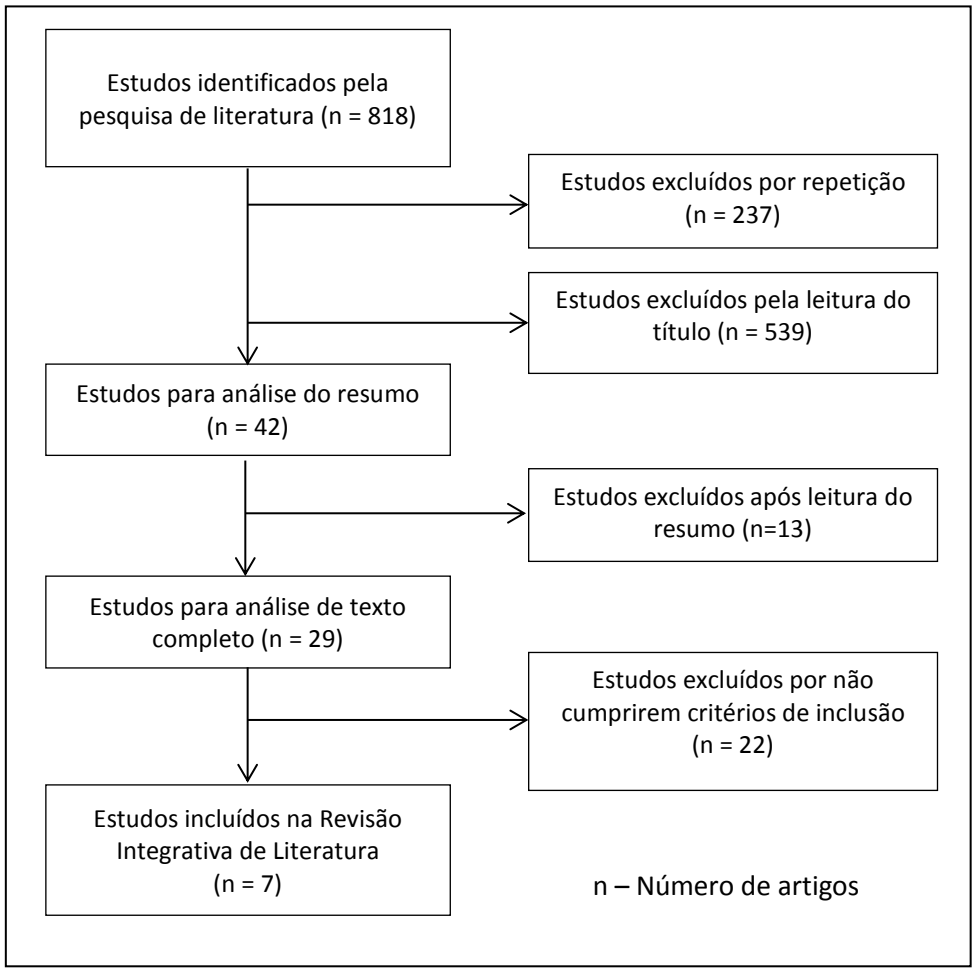

Figura 1 - Processo de seleção dos estudos incluídos

Os sete artigos selecionados foram analisados de forma a dar resposta à questão de investigação definida para este estudo. Os dados foram extraídos dos artigos no sentido de obter informação acerca do país e contexto onde o estudo se realizou, período em que foi realizado, objetivos e desenho do estudo, número e tipo de participantes, resultados obtidos e conclusões retiradas.

2. RESULTADOS E DISCUSSÃO

Os sete estudos primários que satisfizeram os critérios de inclusão pré-definidos são apresentados na tabela 1, constando na mesma o autor(es), ano, país, objetivos, amostra, metodologia e principais resultados de cada artigo.

Tabela 1 – Síntese das evidências encontradas

N. º	Autor(es) / Ano / País	Objetivos	Amostra	Metodologia	Resultados / Conclusões
E1	Jafari, H. Zeydi, A. E. Khani, S. Esmaeili, R. Soleimani, A. 2012 Irão	Quais os efeitos da música na intensidade da dor, no doente submetido a cirurgia cardíaca.	N = 60 doentes submetidos a cirurgia cardíaca. 30 ouviram a música preferida e 30 constituíram o grupo de controlo.	Ensaio clínico randomizado.	A audição da música preferida tem benefícios no controlo da dor. É uma intervenção simples, eficaz e acessível economicamente.
E2	Gélinas, C. Arbour, C. Michaud, C. Robar, L. Côté, J. 2013 Canadá	Descrever as perspetivas dos doentes, da família e dos enfermeiros sobre a pertinência do uso de intervenções não farmacológicas para o controlo da dor, nomeadamente a música.	N = 38 32 enfermeiros, com pelo menos dois anos numa UCI, quatro doentes transplantados e que estiveram internados nos últimos dois anos numa UCI e dois familiares de doentes internados em UCI.	Estudo qualitativo descritivo com oito *focus group*.	A música é útil e viável para o controlo da dor. Varia em função do facto se o doente gosta ou não da música que está a ouvir.
E3	Özer, N. Ozlu, Z. K. Arslan, S. Gunes, N. 2013 Itália	Investigar o efeito da música na intensidade da dor, em doentes submetidos a cirurgia cardíaca.	N = 87 doentes submetidos a cirurgia cardíaca. Amostragem de conveniência em que 44 constituíram o grupo experimental e 43 o grupo de controlo.	Estudo experimental realizado de 15 de setembro de 2007 a 15 de fevereiro a 2008.	Há evidências que apoiam a utilização da música para a redução da dor.
E4	Faigeles, B. *et al.* 2013 EUA	Descrever a dor do doente aquando do posicionamento, de acordo com as variáveis demográficas e clínicas, determinando o uso de intervenções não farmacológicas.	N = 1395 doentes de 169 hospitais, em que 65,9% estavam numa UCI.	Estudo observacional quantitativo correlacional.	Apesar de a música não ter sido das intervenções mais procuradas entre as intervenções não farmacológicas, concluiu-se que o uso desta tem efeito no controlo da dor.
E5	Aktas, Y. Y. Karabulut, N. 2015 Turquia	Determinar o efeito da música na intensidade da dor e no nível de sedação em doentes submetidos a cirurgia cardíaca, durante a aspiração endotraqueal de doentes com ventilação mecânica.	N = 66 doentes submetidos a cirurgia cardíaca. Os primeiros 33 submetidos à cirurgia constituíram o grupo experimental e os restantes 33, o grupo de controlo.	Estudo experimental de agosto de 2012 a janeiro de 2013.	A música é uma prática eficaz para a diminuição da dor nos doentes com ventilação mecânica submetidos a aspiração. É uma prática autónoma e independente dos enfermeiros.
E6	Liu, Y. Petrino, M. A. 2015 China	Investigar a eficácia da música no controlo da dor, ansiedade e sinais vitais, no doente cirúrgico cardíaco.	N = 112 doentes 56 constituíram o grupo experimental e foram escolhidos em dias ímpares e os 56 do grupo de controlo em dias pares.	Ensaio clínico randomizado de novembro de 2013 a março de 2014.	Os resultados evidenciam que música diminui a intensidade da dor, da ansiedade, da tensão arterial sistólica e da frequência cardíaca.
E7	Saadatmand, V. Rejeh, N. Heravi-Karimooi, M. Tadrisi, S. D. Vaismoradi, M. Jordan, S. 2015 Reino Unido	Estudar o efeito dos sons naturais na intensidade da dor dos doentes com suporte ventilatório mecânico.	N = 60 doentes que receberam ventilação mecânica. De forma aleatória, 30 constituíram o grupo experimental e os outros 30 o grupo de controlo.	Estudo randomizado controlado de outubro de 2011 a junho de 2012.	A música é uma intervenção autónoma e independente da enfermagem. Ouvir música diminui os níveis de dor.

Os artigos apurados foram, maioritariamente, publicados em 2013 e 2015 e estão enquadrados no paradigma quantitativo, utilizando como instrumento de recolha de dados o questionário, contudo um dos estudos, nomeadamente o E2 enquadra-se no paradigma qualitativo. São estudos recentes o que revela que esta é uma temática atual e pertinente.

Os artigos selecionados representam uma amostra total de 1818 pessoas (maioritariamente doentes, mas também familiares e enfermeiros) de três continentes diferentes, América, Europa e Ásia, o que vem reforçar a credibilidade desta revisão na medida em que abrange um número considerável de pessoas de diferentes culturas, tradições e costumes.

Como principais objetivos destes artigos, surge a necessidade de compreender de que forma uma intervenção não farmacológica, neste caso a musicoterapia, pode ser eficaz no controlo da dor, em doentes que necessitam de cuidados intensivos ou de cuidados inerentes a uma UCI, como por exemplo um posicionamento (E4), aspiração de secreções (E5), ventilação mecânica invasiva (E7), pós-cirúrgico cardíaco (E1, E3 e E6), entre outros. De salientar que um dos estudos (E2) tinha como objetivo descrever as perspetivas que os doentes, familiares e enfermeiros tinham em relação a intervenções não farmacológicas, concluindo que a musicoterapia é útil e viável, mas variando em função dos gostos musicais dos doentes.

Para a análise estatística, os autores recorreram a diferentes testes estatísticos com recurso ao SPSS (E3, E4, E5, E6 e E7), variando os testes aplicados, desde o qui-quadrado (E4, E5 e E6), t-test (E3, E4, E5, E6 e E7), t-student (E1), one-way (E4), ANOVA (E1, E4, E5 e E7), estatística descritiva (E6), modelos de regressão logística multivariada (E4), abordagem GEE analysis (E6) e Kolmogorov-Smirnov (E7). Um dos autores (E2) teve que utilizar como método de análise a transcrição e avaliação das fitas de áudio, para posterior criação de códigos e classificação das intervenções não farmacológicas segundo a Nursing Intervention Classification (NIC).

Para Chlan e Halm (2013) a música funciona como um distrator poderoso que pode ser usado para ocupar os canais cerebrais com um estímulo agradável ao invés de um sinal de dor ou ansiedade produzindo pensamentos. Havendo a possibilidade, os doentes deveriam poder escolher as músicas que preferiam ouvir, uma vez que diferentes sintomas podem exigir diferentes géneros de música, variando também com o facto de se o doente pretender uma simples distração ou um relaxamento.

Para estes mesmos autores a música tem benefícios imediatos e pode ser implementada com segurança como um complemento à planificação de cuidados. Assim, a musicoterapia surge como uma outra forma de os enfermeiros poderem fazer a diferença na prestação de cuidados de excelência aos doentes críticos.

Hetland, Lindquist e Chlan (2015) referem como resultados da sua revisão de literatura o facto de os doentes críticos terem memórias da dor, ansiedade e desconforto e que para muitos a música consegue ser uma memória feliz, entre tantas outras traumáticas. Alguns estudos mencionaram que a música foi considerada uma ajuda na maioria do tempo em que todos os doentes participariam outra vez numa intervenção com música.

Kramlick (2014) refere que pode ser um desafio implementar as terapias complementares em cuidados intensivos devido às restrições de espaço, presença de muitos equipamentos e frequentes intervenções. Contudo, percebe-se, através dos artigos estudados, que este tipo de intervenção pode ser perfeitamente exequível numa UCI, uma vez que não acarreta qualquer tipo de alterações nas estruturas físicas e não interfere com as já existentes, verificando-se que em todos os estudos há um controlo da dor aquando da utilização da música, chegando mesmo a diminuir a intensidade da mesma.

De referir que para Gélinas, Arbour, Michaud, Robar e Côte (2013) a musicoterapia foi vista como potencialmente útil pelos enfermeiros para o tratamento da dor de doentes capazes de selecionar sua própria música, mas esta mesma não foi considerada uma abordagem ideal para aqueles que não conseguem comunicar as suas preferências musicais.

Tal como referido no PENPCDor (Direção Geral de Saúde, 2013) a elevada prevalência da dor e a transversalidade da sua abordagem pelos profissionais de saúde, com particular destaque para médicos e enfermeiros, deveriam obrigar a uma formação adequada, que deveria iniciar-se no período pré-graduado e ser continuamente aprofundada e atualizada. Este plano enfatiza mesmo que os profissionais de saúde devem adotar estratégias de prevenção e controlo da dor, contribuindo para o bem-estar, redução da morbilidade e humanização dos cuidados de saúde dos doentes.

Desta forma, Cassileth e Gubili (2010) defendem que quando as terapias complementares, como no caso da musicoterapia, funcionam em sinergia com um regime farmacêutico para a dor, é possível melhorar a eficácia e reduzir os custos, uma vez que a música consegue alcançar níveis emocionais profundos e certos tipos de música podem ter significados especiais para cada pessoa.

Hetland, Lindquist e Chlan (2015) referem que a evidência aponta a musicoterapia como uma intervenção efetiva para minimizar sintomas relacionados com a ventilação mecânica e que promove ganhos, sendo por isso uma intervenção potencial para reduzir custos e aumentar a satisfação do doente. Por outro lado, Jafari, Zeydi, Khani, Esmaeili e Soleimani (2012) demonstraram com o seu estudo que existem efeitos benéficos na utilização da música preferida para o controlo da dor após a cirurgia cardíaca enquanto os pacientes estão internados na UCI. Defendem ainda que ouvir música é uma intervenção simples, barata e que pode ser simplesmente fornecida por um leitor de leitor de música e auscultadores, recomendando por isso o uso extensivo de musicoterapia em pacientes submetidos a cirurgia de coração aberto para conduzir à redução da dor no pós-operatório.

No seu estudo, Aktas e Karabulut (2015) demonstraram que a musicoterapia é uma prática com resultados na redução da dor e no controlo dos níveis de sedação em doentes com ventilação mecânica durante a aspiração endotraqueal e que é uma intervenção de enfermagem não invasiva, sem gastos e sem efeitos secundários.

Corroboramos da opinião dos autores supracitados quando referem que são necessários mais estudos para comprovar os ganhos do uso da música durante a ventilação mecânica e outros procedimentos, uma vez que apesar destes sete estudos obterem a mesma conclusão, que prova a eficácia e eficiência da música no controlo da dor, nos doentes com necessidades de cuidados intensivos, é importante que se estude e aprofunde mais esta temática. Considera-se tal facto deveras pertinente, não só por se tratar de uma intervenção autónoma da enfermagem, mas também por ser uma intervenção sem custos e que se provou ser eficiente e eficaz no controlo da dor.

Em três dos sete artigos (E2, E5 e E7) verifica-se que a terapia pela música pode e deve surgir como uma intervenção autónoma de enfermagem para o controlo da dor. Após a recolha das preferências musicais do doente, ajustar o volume da música e adequar o timing da implementação da intervenção, verificou-se que os resultados são favoráveis.

Segundo o Regulamento dos Padrões de Qualidade dos Cuidados Especializados em Enfermagem em Pessoa em Situação Crítica (Ordem dos Enfermeiros, 2011, p. 4-6) o enfermeiro especialista em enfermagem médico-cirúrgica tem contempladas como competências a "gestão diferenciada e eficaz da dor com a implementação de instrumentos de avaliação da dor e de protocolos terapêuticos – medidas farmacológicas e não farmacológicas – para alívio da dor", "intervenção precisa, eficiente, em tempo útil, eficaz e de forma holística face à pessoa em situação crítica" e "identificação tão rápida quanto possível, dos problemas potenciais do cliente, relativamente aos quais o enfermeiro tem competência para prescrever, implementar e avaliar intervenções que contribuem para evitar esses mesmos problemas ou minimizar-lhes os efeitos indesejáveis". Por conseguinte, os enfermeiros especialistas em enfermagem médico-cirúrgica para além de poderem aplicar a intervenção em si, tal como os enfermeiros generalistas, podem ainda gerir a implementação de protocolos ou procedimentos e supervisionar os mesmos.

Respondendo à questão que norteia este trabalho, pode-se assim concluir, à luz da evidência científica, que a música é uma intervenção autónoma de enfermagem efetiva no controlo da dor nos doentes adultos internados em UCI.

CONCLUSÕES

Os principais resultados apurados mostram que a musicoterapia tem eficácia no controlo da dor, em doentes com necessidades específicas inerentes a uma UCI. Diferentes autores afirmam que a música é eficaz no controlo da dor, assim como outros sinais vitais, contudo, os resultados desta intervenção variam consoante os tipos de música utilizados, as preferências musicais do doente, assim como o volume da mesma.

Muitos são os procedimentos de enfermagem desagradáveis e dolorosos para os doentes, nomeadamente os associados à ventilação mecânica, ao pós-operatório, ao posicionamento, aspiração de secreções, entre outros, em que a música emerge, assim, como uma prática autónoma e independente de enfermagem, que pode ser usada como estratégia não farmacológica para o controlo da dor.

Através desta análise constatou-se que a utilização da música é útil na redução da dor e no seu controlo, contudo seria pertinente investir na realização de mais estudos de modo a corroborarem a utilização da música como uma atividade autónoma do enfermeiro.

Em ultima análise e uma vez que a utilização da música como medida terapêutica não farmacológica se encontra ainda numa fase inicial de divulgação e utilização, seria de aproveitar a oportunidade para que a sua prática fosse regulada e regulamentada; esta regulamentação, através da Ordem dos Enfermeiros poderia ser plasmada nas competências do enfermeiro especialista.

No entanto, em primeiro lugar é impreterível modificar mentalidades, atitudes e políticas dos serviços e das instituições, de forma a garantir as condições da utilização da música como atividade autónoma da enfermagem.

Faz parte das competências dos enfermeiros prestar cuidados de enfermagem de forma a manter, melhorar e recuperar a saúde do doente. O controlo da dor é um dever do enfermeiro, pelo que é fundamental que este seja capaz de selecionar intervenções não farmacológicas, considerando as preferências dos doentes e os objetivos a alcançar, tendo em conta a evidência científica atual.

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A EDUCAÇÃO COMO INSTRUMENTO PARA REDUÇÃO DA PEGADA HÍDRICA DOS JOVENS

EDUCATION AS A TOOL TO REDUCE THE WATER FOOTPRINT OF YOUNG PEOPLE

LA EDUCACIÓN COMO INSTRUMENTO PARA REDUCCIÓN DE LA PEGADA HÍDRICA DE LOS JÓVENES

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RESUMO

Introdução: No atual contexto de alterações globais, a água é um bem escasso em muitas realidades geográficas. A educação da população jovem tem um papel particularmente relevante, na gestão sustentável da água.
Objetivos: Estimar a Pegada Hídrica (PH) em jovens, incluindo os usos diretos e indiretos de água. Desenvolver uma aplicação educacional, para mostrar medidas simples de poupança de água nas suas atividades diárias.
Métodos: Foram desenvolvidos dois questionários, o primeiro para calcular a PH dos jovens, e o segundo para servir de base ao jogo educacional. Participaram 82 estudantes entre os 12 e os 15 anos.
Resultados: A PH média nos jovens é de 3223 ± 830 L/dia. Os usos indiretos de água são cerca de dez vezes superiores aos usos diretos. Nos usos indiretos, a alimentação representa a maior parte da PH (84.4 %) e em 2º lugar vêm os relacionados com o vestuário (6.4%). Nos grupos de alimentos estudados, a carne representa a maior contribuição (39.6% da PH). Para ambos os sexos, o elevado consumo direto de água (aprox. 264 L/dia) é devido a duches prolongados.
Conclusões: Os jovens estão a consumir demasiada água, devendo rever hábitos na alimentação, no vestuário, e na duração dos duches diários.

Palavras-chave: Educação dos Jovens; Pegada Hídrica; Hábitos de Consumo.

ABSTRACT

Introduction: Due to the global changes, fresh water became scarce in many geographical realities. In this domain, education can play a significant role, contributing to the sustainable water management.
Objectives: Estimate the Water Footprint (WF) of young people, including their direct and indirect water uses. Develop an educational application that aims to exemplify measures which lead to water conservation in their daily activities.
Methods: Two questionnaires. The first one was formulated in order to estimate the average WF of a young person, and the second one to establish the basis of the educational application. Samples included 82 students in the 12 – 15 age range.
Results: The average WF of a student is 3223±830 L/day. The total indirect water use is over 10 times higher than direct use. Food accounts for the major part (84.4 %) of young person's WF, and in the second place of indirect uses is clothing-related WF (6.4 %). Among analysed food groups, meat has the largest contribution (39.6 %) to the total personal WF. For both genders, high direct water use (264 L/day) is due in large part to long showers.
Conclusions: Young people consume too much fresh water, what suggests the need to improve their behaviour in terms of eating habits, clothing and shower duration.

Keywords: Education of Young People; Water Footprint; Consumer's Behaviour.

RESUMEN

Introducción: En el actual contexto de cambios globales, el agua es un bien escaso en muchas realidades geográficas. La educación de la población puede desempeñar un papel relevante en su concienciación sobre la gestión sostenible del agua.
Objetivos: Este estudio se realizó en el Algarve, y pretendió estimar la Huella Hídrica (HH) en los jóvenes, incluyendo sus usos directos e indirectos de agua. También se desarrolló un juego educativo, que permitió mostrar medidas simples para ahorrar agua en sus actividades diarias.
Métodos: Se desarrollaron dos cuestionarios, el primero para calcular la HH de los jóvenes, y el segundo para servir de base al juego educativo. Participaron 82 estudiantes entre los 12 y los 15 años.
Resultados: La HH media en los jóvenes es de 3223 ± 830 L /día, y los usos indirectos de agua son cerca de diez veces superiores a los usos directos. En los usos indirectos, la alimentación representa la mayor parte de su HH (84.4%) y en 2º lugar ven los relacionados con la vestimenta (6.4%). Entre los diversos grupos de alimentos estudiados, la carne representó la mayor contribución a HH (39.6%).En los dos sexos, el alto consumo directo de agua (aprox. 264 L / día) es debido a duchas largas.
Conclusiones: Los jóvenes están consumiendo demasiada agua, debiendo revisar hábitos en la alimentación, en la ropa, y en la duración de los duchas diarios.

Palabras Clave: Educación de los jóvenes; Huella Hídrica; Hábitos de Consumo.

INTRODUCTION

Education is an indispensable element of prosperity, it is one of the three key dimensions of Human Development Index (United Nations Development Programme, 2013). Education provides people with skills, knowledge and comprehension that forms the world and determines *the future of humanity. In 1992,* United Nations Conference on Environment and Development issued Agenda 21, as an action plan for the 21st Century to be implemented by the organizations of UN System. One of the actions identified in Agenda 21 was to reorientate education towards sustainable development: formal and non-formal education are critical to change people's attitudes and to improve their capacity to address environmental and development issues (United Nations Conference on Environment & Development, 1992). According to Mekonnen and Hoekstra (2016), 3.97 billion people face severe water scarcity at least 1 month in a year, 1.78 billion are facing during at least 6 months per year, and 0.50 billion during all year. It is clear, that water, among other natural resources, is one of the priorities to be addressed by Education for Sustainable Development. Water education, as a mean of Integrated Water Resources Management, has a huge potential in addressing water users. According to Stern (2000), there are four major variables influencing pro-environmental behaviour: 1) attitudes (norms, beliefs and values); 2) contextual forces (laws and regulations, policies, available technology); 3) personal capabilities (knowledge and skills required for particular actions, social and economic status, time availability); and 4) habits (or routines). When addressing a water user, education can have influence on attitudes, knowledge, skills and habits. Therefore, three of four variables can be positively affected by education, what is intended in the current work.

This work aimed to estimate and analyse the water footprint of young citizens and create an educational tool that would encourage them to reduce their water footprints.

1. METHODS

In order to estimate the WF of a young person, a questionnaire on direct and indirect water uses was developed. Meanwhile, we also started the creation of the educational tool by formulating the educational quiz.

A project called *Your WaterFootprint* was developed in collaboration with two schools in Faro (Algarve, Portugal), involving students of secondary generaleducation. Each student filled the created questionnaire and took the educational quiz. This way we carried out the study on young person's WF and tested the created educational quiz. It permitted to estimate the daily average WF of a young person and analyse the different aspects that affect it. The results of this study were also used to verify the content of the educational quiz, which was optimized taking into account its testing results.

1.1 Sample

The questionnaires were distributed to students of secondary general education up to 15 years old (in Portuguese system – *ensino básico*, *3º ciclo*). From over 100 students who participated in the study,82 students (47 girls and 35 boys) correctly filled the created questionnaire.

1.2 Data collection instruments and procedures

The first task of the study was the development of the questionnaire that would allow to obtain data from young people to make the most realistic estimation and at the same time would serve as an educational tool. Theintention to addressyoungpeopleimpliedtworestrictions: the lack of awareness of young people to respond to certain questions, considering that significant number of young people cannot provide with some specific information, for example – shower flow or amount of meat consumed in a week; andthe time limit - the questionnaire cannot take longer than 45 minutes, an academic hour in schools. A very exhaustive questionnaire is not suitable for young people because they would lose interest to complete it. These restrictions determined the development of the adapted questionnaire.

The questionnaire was divided into two major parts: Direct Water Use and Indirect Water Use. For both parts of the questionnaire a number of values were established.

Assuming that a 12-15 year old person is not well aware of water usage of devices, we attributed values to certain devices and actions and formulated questions in a way to obtain the information needed to estimate water usage. For example, considering shower flow to be 12 L/min, in the questionnaire we ask to provide with the average time spent in shower daily.

The most important criterion in choosing questions related to indirect water use was student's ability to respond to the question. For example, it was decided to formulate questions about products that could be easily quantified in units or portions rather than grams. The second criterion was the popularity of the products and goods. The questionnaire could not cover a big variety of products. For that reason, one question represents a group of products or goods. For instance, apples, bananas and oranges were chosen to represent WF related to fruit consumption. T-Shirts and jeans were chosen to represent clothing not only because these are popular clothes among young people, but also because they are mostly made of cotton, which makes the estimation more precise. The values used to calculate direct and indirect water use are presented in the Table 1.

Table 1. Values used to calculate direct and indirect water use

Direct water use				
Device				Water usage
Tap (bathroom and kitchen) and shower				12 L/min
Single flush toilet or double flush toilet				10 L/flush or 6/3 L/flush (Almeida, Vieira, & Ribeiro, 2006)
Dishwasher				22 L/cycle (Almeida, Vieira, & Ribeiro, 2006)
Washing machine				50 L/cycle (Benito et al., 2009)
Action – tooth brushing		Definition		Water usage
Choise 1. Using a cup		0.25 L/cup × 2 times per day		0.5 L/day
Choise 2. Closing tap while brushing		10 s × 12 L/min × 2 times per day		4 L/day
Choise 3. Not closing tap while brushing		2 min × 12 L/min × 2 times per day		48 L/day
Action – hand washing		Definition		
Choise 1. Closing tap while soaping hands		15 s × 12 L/min		3 L/washing
Choise 2. Not closing tap while soaping hands		35 s × 12 L/min		7 L/washing
Indirect water use				
№	Product	Global average WF L/kg	Weight of 1 portion/item (g)	WF of 1 portion/item (L)
1.	Oranges	560 (Mekonnen & Hoekstra, 2010a)	150 (1 orange)	84.0
2.	Orange juice	1018 (Mekonnen & Hoekstra, 2010a)	250 (1 glass)	255
3.	Apples	822 (Mekonnen & Hoekstra, 2010a)	150 (1 apple)	123
4.	Bananas	790 (Mekonnen & Hoekstra, 2010a)	200 (1 banana)	158
5.	Potatoes	287 (Mekonnen & Hoekstra, 2010a)	200	57
6.	Rice	2497 (Mekonnen & Hoekstra, 2010a)	100 (uncooked)	250
7.	Pasta	1849 (Mekonnen & Hoekstra, 2010a)	100 (uncooked)	185
8.	Bread	1608 (Mekonnen & Hoekstra, 2010a)	50 (bread roll)	80
9.	Chocolate	17 196 (Mekonnen & Hoekstra, 2010a)	100 (1 bar)	1720
10.	Cotton fabric	9982 (Mekonnen & Hoekstra, 2010a)	-	-
T-shirt made from cotton fabric		-	250 (1 T-Shirt)	2496
Jeans made from cotton fabric		-	800 (1 pair of jeans)	7986
11.	Chicken	4325 (Mekonnen & Hoekstra, 2010b)	200	865
12.	Beef	15 415 (Mekonnen & Hoekstra, 2010b)	200	3083
13.	Pork	5988 (Mekonnen & Hoekstra, 2010b)	200	1198
14.	Eggs	3265 (Mekonnen & Hoekstra, 2010b)	60 (1 medium size egg)	196
15.	Milk	1021 (Mekonnen & Hoekstra, 2010b)	250 (1 glass)	255
16.	Butter	5553 (Mekonnen & Hoekstra, 2010b)	10	55.5
17.	Cheese	5060 (Mekonnen & Hoekstra, 2010b)	20 (1 slice)	101
Sandwich: bread roll, butter, cheese.		-	80 (50 + 10 +20)	237
18.	Pizza Margherita	-	725	1259 (The Water Footprint Network, s/d)
19.	Printing and writing paper made from eucalyptus from subtropical biome in Portugal.	905 (Van Oel & Hoekstra, 2010)	5 (1 sheet)	4.5

An example of the question from the developed questionnaire is provided below.
How much water do you consume to wash your hands?

a) I turn off the tap while I soap my hands.

Number of hand washings per day × 3 L/washing

b) I do not turn off the tap while I soap my hands.

Number of hand washings per day × 7L/washing

1.3 Statistical analysis

For the statistical analysis of data Excel 2013 was used. In total, 22 variables were analysed in two cases: 1) taking into consideration all students and 2) separating males and females. For the statistical significance $p < 0.05$ was considered.

1.4 Educational application

The aim of the educational application is to encourage young citizens to reduce their WFs. Learning requires attention and, thus, it was decided that the application should have a form of a quiz because answering to questions requires more concentration and involvement. The application seeks not to test the knowledge but to provide with it. The results of study by Leeuw, Valois and Seixas (2014) showed that the most determining factor stimulating to perform environmentally sustainable behaviours among high school students is student's sense of control over behaviour: the higher is the feeling of control over behaviour, the higher is intention to perform it. Therefore, it was decided that questions must not be complicated, because it is intended to demonstrate that every person can easily adapt behaviours and habits that lead to water conservation.

Formulation of the content

The first step was the establishment of the key requirements for the educational application. It was decided that this application must: educate youth to conserve water; introduce the concepts *personal WF* and *WF of a product*; demonstrate that each person uses water directly and indirectly and that conscious adequate behaviour can reduce the *personal WF*; contain the relevant and important information that addresses individual attitudes with information on how direct and indirect water uses can be reduced; address the concept that water is a globally shared resource; and finally, the application should have a colourful design attractive for the younger audience.

The following stage was ananalysis of literature addressing the WF topic. This has permited to find the most relevant information and establish the content and the structure of the educational application. Based on this content and structure, the educational quiz was formulated. Table 2 represents the arguments for choosing the subject of each question and the key message behind each question – the educational content.

Table 2. The content and the structure of the educational application

Introduction: Water is a finite resource – The First Dublin Principle for Integrated Water Resources Management (Solanez & Gonzalez –Villarreal, 1999)	
Definition of personal water footprint adapted to young people	
First part: direct water use	
The argument for selecting the subject	Key message behind the question
Shower and toilet – major domestic water uses (Benito et al., 2009).	. Introducing the main idea – personal behaviour determines water consumption and personal WF.
	. An example of a simple logic for water saving at home. It is important to be attentive.
The easiest way to save water at home – to turn off the tap.	. Running water is often not necessary in our daily routines.
Water use related to the most common equipment used at home.	. Dishwasher and washing machine help us to save water when we use their full capacities.
Definition of water footprint of a product adapted to young people	
Second part: indirect water use	
The argument for selecting the subject	Key message behind the question
Globally, consumption of agricultural products contributes to 92 % of the total water footprint (Hoekstra & Mekonnen, 2012). Each of the questions (5, 6 and 7) represents water footprints of different food groups – crops, meat and dairy products. Meat-based diets have a larger WF compared to a vegetarian diet (Mekonnen & Hoekstra, 2012). The WF of any animal product is larger than the WF of a wisely chosen crop product with equivalent nutritional value (Hoekstra, 2014).	. The food we daily consume costs huge amounts of fresh water. Some products have larger WFs than others. A sustainable use of food is crucial in reducing personal WF.
	. Meat has a large WF. Personal WF can be reduced by substituting part of meat meals to other products rich in proteins.
	. Dairy products also have big WFs. Food wastage implies water wastage. It is an unacceptable behaviour.
The importance to recognize that water is shared globally in a virtual form (Hoekstra, 2013).	. Either the product is produced locally or in distant regions of the world, in both cases production implies the use of water.
Cotton production and processing result in huge environmental problems: drying rivers, dropping lake and groundwater levels and water quality deterioration (Hoekstra, 2013). Young people are potential consumers of fast fashion and other clothing.	. Another basic need – clothing – is a constituent part of personal WF. Cotton production requires huge quantities of water and results in pollution. Personal WF can be reduced by limiting our purchase of clothing.
The WF of a product – paper widely used among students. Production of a commonly used good, that physically does not seem to contain water, in fact does not only require but also pollutes water.	10. An economic use of paper contributes to reduction of personal WF.
Conclusion: Your personal behaviour has an impact on fresh water resources.	

Verification and optimization

The development of the application included a phase that permitted to test, verify the content and optimize the created educational quiz. In order to assess the clarity of created quiz, it was tested with students. Testing results of the educational quiz in conjunction with the results of the study on the WF of a young person were used to optimize the quiz and verify its content. These verifications allowed proceeding to the creation of the application.

2 RESULTS AND DISCUSSION

2.1 Water Footprint of a young person

The results of the study are supported by the data obtained from 82 school students. The obtained data permitted to estimate the average daily WF of a young person: 3223±830 L. This value does not differ significantly between genders (t-test, p=0.758). Figure 1 illustrates the contribution of indirect water use: food, clothes and paper and direct water use to the total daily WF of a young person.

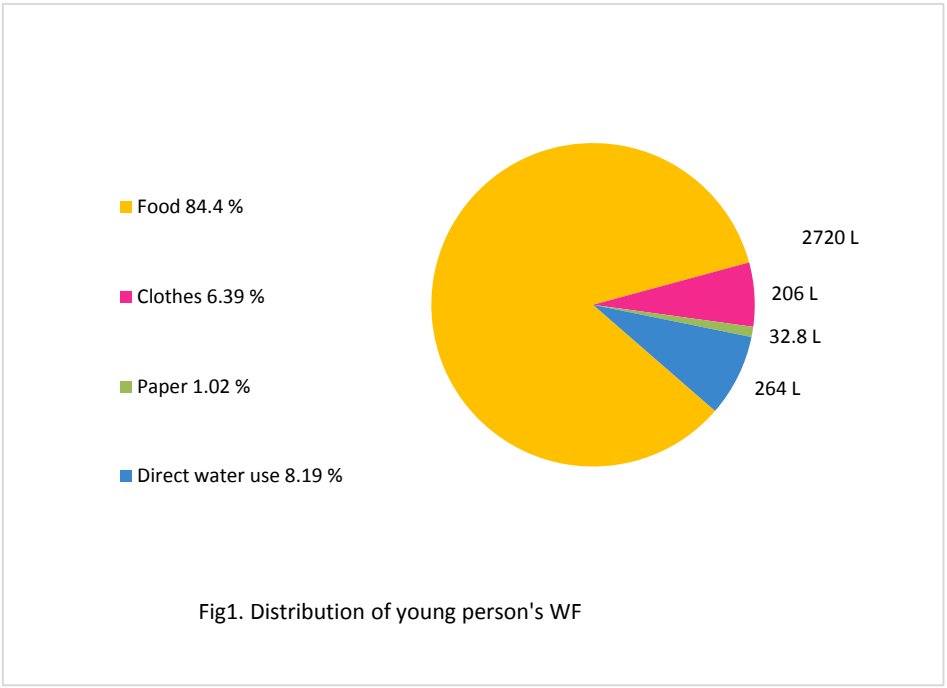

Figure 1. Distribution of young person's WF

The age of the audience and the time limit did not permit to quantify the WF related to the use of many industrial products, which, according to Hoekstra and Mekonnen (2012), at a global level contributes to 4.7 % of the total WF related to consumption. For the same reason, the study could not consider some food groups.

Indirect water use accounts for 91.8 % of the personal WF what makes it 11 times higher than direct use. Considering the fact that this study covers most of personal direct water uses and does not cover some remaining indirect water uses, it is logical that the actual portion of indirect water use is even bigger.

Direct water uses

Direct water use accounts for a relatively small part (8.19 %) of the total WF of a young person. However, the volume - 264 L/day is very high, when compared with 100 L/day, which is the average quantity of water that is considered enough to meet all consumption and hygiene needs (Howard & Bartram, 2003).

The contribution of different daily direct water uses is uneven. Showers account for the biggest part of direct water use, corresponding to 164 L/person/day (or 62.0 % of total direct water use), the second one is toilet flushing - about 47 L/person/day (17.7 %), followed by hand washing (7.07 %) and running water used to wash the dishes (6.92 %). Washing machine water use

makes up 3.39 % of the total. The least significant consumptions are: water used for tooth brushing and dishwasher water use – each of these uses accounts for less than 1.5 % of the total daily direct water use.
In this study shower and tap flow was considered to be 12 L/min (conventional shower and tap flow in Portugal). Certainly, it is not the actual flow in all the households of 82 respondents. If, for example, all the households had more efficient showers, with the flow of 9 L/min, the average daily shower water consumption would be 123 L. If the flow was even lower, for example, 7 L/min, average shower water use would reduce significantly, what proves the importance of water saving devices but the volume still would be very high - 96 L/person/day. It implies that shower water use is high because of the time spent in shower. As the study results showed, on average, a student daily spends 13 min 40 s in the shower. Logically, young person's behaviour must be addressed, in order to significantly lower direct water use. We found differences between genders: girls on average spend 15 min 55 s in the shower and boys spend 10 min 41 s. In total direct water uses girls use 73 L/day more than boys and shower accounts for the major part of this difference - 63 L.
The second biggest direct water use, toilet flushing, included toilet flushing at school and toilet flushing at home. The average water use for toilet flushing at school is 18 L/person/day. The average water use for toilet flushing at home is 29 L/person/day. Thirty-nine of 82 students claimed to have toilets with dual flush systems at home. Assuming that the full flush is 6 L and the reduced flush is 3 L, the average water use for toilet flushing at home of these 39 students is 20 L/person/day. Forty-three students claimed to have conventional toilets at home. Assuming that 1 flush consumes 10 L of water, the average water use for toilet flushing at home of these 43 respondents is 38 L/person/day, which is nearly 2 times more than water consumption using dual flush system with 6 or 3 L/flush.
Most of young people (85.4 %) claim to turn off the tap while soaping hands.Also, 76.8 % of young people turn off the tap and 22.0 % use a cup when brushing teeth. These good habits certainly contribute to water saving. In contrast to that, over than 30 % of students have dishwashers at home but they still do the washing-up with running water. It is clear, that young person's direct water use is determined by the combination of several major factors.
The statistical analysis of direct water uses showed that girls have a significantly higher consumption than boys (t-test, p=0.002). This is largely determined by shower water consumption, which differs significantly (t-test, p=0.003), as well as the use of water for laundry (t-test, p=0.001).

Indirect water uses

From indirect water uses, food distinguishes with the largest portion - it accounts for 84.4 % of the total young person's WF. Although the questionnaire does not cover a big variety of products, it includes the main food groups, permitting to compare the contributions of different foods. Figure 2 illustrates the partial distribution of different foods within the total food WF.

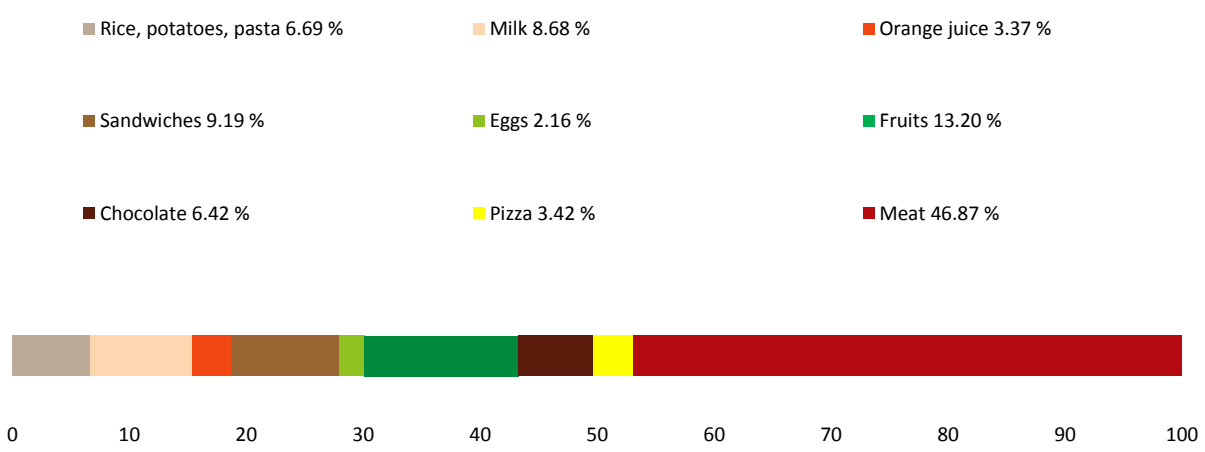

Fig 2. Partial distribution of different foods within the total food-related WF

Figure 2. Partial distribution of different foods within the total food-related WF

Fruits have the second biggest WF, but it is 3.5 times smaller than the WF of meat. Other remarkable analysed foods are cheese sandwiches (cereals and dairy), milk, side dishes: rice (cereals), pasta (cereals), potatoes (vegetables) and chocolate.
The proportion of meat WF is so significant that it is important to distinguish it. Meat accounts for 46.9 % of food WF what makes up 39.6 % of the total WF. To clarify why in young Portuguese WF meat has the largest input, a separate analysis was made. In this study, 3 kinds of meat were included: chicken, pork and beef. The questionnaire asked students to provide with the number of portions (1 portion = 200g) of different meats (chicken, pork and beef) consumed weekly. That permitted to calculate average weekly and daily consumption of these meat products, and the daily WF related to consumption of different meat products. This information is presented in Table 3.
Comparing the intake of different meats, chicken is the meat of the highest consumption, followed by beef and pork. In contrast to the intake of chicken, its calculated daily WF is the smallest, and the opposite accounts for pork and beef, their intakes are lower but their daily WFs are higher. Explanation for that is the fact that WFs of these meats differ substantially. As can be seen from the Table 3, the global average WF of 1 kg of beef is over 2.5 times bigger than the WF of 1 kg of pork ant the latter is over 1.3 times bigger than the WF of 1 kg of chicken.
If we compare meat WF (39.6 %) with clothing WF (6.39 %), the latter is relatively small. Yet, no precipitate conclusions can be made. The yearly number of purchased cotton T-Shirts (0.25 kg each) and jeans (0.8 kg each) allowed to find out the total amount of cotton fabric purchased during one year. That permitted to estimate the daily WF related to the purchase of clothing, as presented in Table 3.

Table 3. Meat and clothing related WF

Meat consumption and WF					
Meat product	Portions per week	Weekly amount (g)	Daily amount (g)	Global average WF (L/kg)	Daily WF (L)
Chicken	2.0	402	57.5	4325 (Mekonnen & Hoekstra, 2010b)	249
Pork	1.5	298	42.5	5988 (Mekonnen & Hoekstra, 2010b)	255
Beef	1.8	350	50.0	15 415 (Mekonnen & Hoekstra, 2010b)	771
Total	5.3	1050	150	-	1275
Purchase of clothing and WF					
Clothing	Number of units purchased yearly	Amount of cotton fabric purchased yearly (kg)		Global average WF of cotton fabric (L/kg)	Daily WF
T-Shirts	14.5	3.625		9982 (Mekonnen & Hoekstra, 2010a)	99.1
Pair of jeans	4.9	3.920			107
Total	19.4	7.545		-	206

Here it is crucial to note that clothing WF was estimated including only two cotton-based garments. As mentioned before, they were chosen to represent clothing not only because these are widely used garments among young people but also because they are mostly made of cotton what makes the estimation more accurate. As can be seen, the yearly purchase of T-Shirts and jeans is elevated. Considering that young people use many other kinds of clothes, we assume that the actual WF related to the purchase of clothing is, in fact, several times higher, especially in countries where outfit is determined by seasonal changes in weather.

How to reduce the WF of a young person?
Based on this study, we are able to demonstrate, that certain alterations permit to reduce personal WF. We provide with a theoretical example of a daily WF reduction:
40 % less T-Shirts and jeans yearly → reduction of 83 L/day;
50 % less beef, 40 % less pork, 50 % less chocolate, 15 % less milk weekly → reduction of 386 + 102 + 87 + 35 = 610 L/day;
4 min shorter shower daily → reduction of 48 L/day.

These changes would permit to save a total of 741 L daily. Biggest reduction is related to diet, and, naturally, it requires careful considerations since reduction of meat intake implies reduction of proteins and amino acids. Based on the recommended daily intakes of these nutrients, a new water-friendly diet could be established for any age group. As marine fisheries require little to no fresh water inputs (Gephart, Pace & D'Odorico, 2014), a substantial part of proteins coming from meat could be replaced by marine fish. The combination of proteins from different sources would not only result in reduction of personal WF, but would also allow supplementing the diet naturally. This alternative is especially favourable for countries that have access to marine resources.

2.2 Educational tool – verification and optimization

The study on young person's WF served to verify the content of the educational quiz. The analysis of personal WF has showed that food consumption is responsible for the major part of individual's WF. It permitted to identify the foods with the highest WFs what proves the importance to include these products in the educational tool. The study showed that young people buy a lot of clothing what implies the need to address the WF related to the purchase of clothes. Analysis of direct water uses has showed that high direct water consumption is due in a large part to long shower duration, and, thus, it must be addressed. Toilet flushing and water use related to running water, namely, hand washing and dishwashing are other major water uses, what implies the need to include these subjects in the educational tool. The analysis also showed that the use of dishwasher contributes significantly to water saving, and, thus, it is relevant to emphasize the importance of using equipment in its full capacity.
In order to assess the clarity of the created educational quiz, the basis for the application, it was tested students. Testing results showed that majority of the questions were understood well by students because analysing each question separately, over 50 % of respondents managed to choose the correct answer. Although, there was one question where the rate of choosing incorrect answer was nearly 50 %, what seems to suggest that this question was not adequate to student's knowledge. For that reason, this question was replaced leaving the same idea about unnecessary running water but changing the formulation of the question.
Verification and optimization permitted to proceed to the creation of the application. The form of presentation and the visual content play an important role in the overall effect of the educational resource. The application, applied for young people, must be colourful and vivid. For that reason, the combination of traditional painting, photography, digital art and graphic design were used to create illustrations for the application.
The next stage of development of the application was programming. Based on the established project, the application was programmed in a way that: after reading the question, one of the three possible answers (A, B or C) must be chosen before proceeding; every question is followed by a correct answer containing important educational information; at the end, a summary of results is provided. Finally, a game development platform called *Unity* was used to create the application that was entitled as *Save Water*.

CONCLUSIONS

The WF of a youngpersonishigh (3223 L/day), duein a largepart to indirectuses (91.8 %), whatimpliestheneed to addressindirectwateruse. Food is the major constituent (84.4 %) of the personal WF, what shows the importance to analyze dietary choices. It is natural that products with high WFs, like meat, and especially beef, have a large portion in young person's WF. Therefore, minor or moderate changes in young person's diet could result in significant fresh water savings. Clothing is also a significant component of indirect water use, as solely taking into account two most popular garments, they make up 6.39 % of the total WF. For that reason, it is crucial to teach young citizens about sustainable consumption. High direct water use, especially in case of girls, is due in a large part to long showers. It reveals a need to address and change the behaviour of youth towards water conservation.
According to the most recent UN estimate, based on the medium-variant projection, by 2050 the world population will reach 9.7 billion (United Nations Department of Economic and Social Affairs, Population Division, 2015). As for 2011, this estimate was 9.3 billion. With the reference to a latter number, Hoekstra (2013) states that to make sure that the total water footprint of humanity will not grow, by 2050 the average WF per capita must be reduced to 910 m^3/year, which is around 2491 L/day. Thus, with the perspective of near future, an average young person from the study has to reduce the personal WF by around 732 L.

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