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Knowledge, perceptions and attitudes of hospital pharmacists about antibiotic resistance - a pilot study in Portugal

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Abstract

Introduction: Antibiotics are the most commonly used and costly drugs used in hospitals, and the inappropriate use is related with occurrence of bacterial resistances, that is one of the most important problem of public health. Pharmacists play an important role in implementation of guidelines in hospital, and their proactive attitude related to antibiotic use and bacterial resistances, could improve antibiotic use in hospitals.

Aim: This study sought to evaluate reliability and reproducibility of a questionnaire on knowledge and attitudes of hospital pharmacists about antibiotic use and microbial resistance.

Method: A structured questionnaire was constructed accordingly data obtained during a qualitative study, and literature review. Our research was developed with pharmacists working in hospitals of statistically Territorial Unity Nomenclature (NUT) II area of Portugal, defined by Health Northern Regional Administration (ARS-N). This study was approved by the Ethics Committee and Board of Directors of each hospital. Questionnaires were administered to each pharmacist twice, at an interval of 2 to 4 weeks. Attitudes were measured using a continuous visual analogue scale, with answers scored from 0 (total disagreement) to 20 (total agreement). Questionnaire reproducibility was determined by intraclass correlation coefficient (ICC).

Results: A total of 31 hospital pharmacists participated in this survey. Questionnaire evaluated 17 attitudes related to knowledge and perception of the problem, attribution of responsibilities, pharmacists practice behaviours and perceptions of measures that could improve antibiotic use. Attitudes related to dispensing process demonstrated highest ICC (95%, IC).

Conclusion: Results obtained allows us to conclude that our questionnaire is reproducible to evaluate the attitudes and knowledge of hospital pharmacists related to antibiotic use and resistances. We recommend, based on these results, continuity of studies including transversal studies with samples more representatives.

Key-words: attitudes; reproducibility questionnaire, hospital pharmacists

Introduction

Resistance to antimicrobial drugs is one of the main concerns to World Health Organization. It's a problem that has been evolved in the last decades and has becoming an important issue in public health. The increased use of antibiotics worldwide has a direct relation to the emergence of bacterial organism's resistances issue that is leading the world to serious economic and clinical problems [1-9]. Management of disease is threatened by the increased resistance rate of a great number of pathogens leading to a worrying decrease on antibiotic's effectiveness [2, 4]. Use of broad-spectrum combinations has increase due to this loss of efficacy that results from the most frequent resistance of pathogens to conventional antimicrobial treatments [10]. The increased costs of health-treatments and the rise of new adverse events are also serious consequences of antimicrobial resistance [9, 11]. The aim of this study is to assess the reproducibility of self-administered questionnaire designed to identify hospital pharmacist knowledge and attitudes related to antibiotic resistances and antibiotic use.

Methods

2.1. Study Population and sample selection

The study was developed in an area of the Nomenclature of Territorial Units for Statistics (NUT) II of Portugal, defined by the Northern Regional Health Administration (ARS-N), and population studied included hospital pharmacists working in Hospitals from four districts of the north of Portugal (Bragança, Porto, Viana do Castelo and Vila Real). This study was approved by the Ethics Committee and Board of Directors of each hospital.

2.2. Development of questionnaire

A structured questionnaire was constructed after review of published studies and after performed a qualitative study designed with pharmacists' focus group sessions. Questionnaire have one sheet (two pages) long divided into five sections: (1) a box containing instructions on how to complete the form; (2) seventeen statements regarding knowledge and attitudes related to perception of microbial resistance and dispensing habits followed by a continuous visual analogical scale (VAS) to response with a cross; (3) and assessment of situations that pharmacists refused distribution of antibiotics prescribed; (4) personal and professional data, such as age, gender, workplace, job functions, and mean number of antibiotics dispensed daily; and (5) in this section professionals are invited to give suggestions to improve antibiotic use and bacterial resistances.

Attitudes, were measured using a horizontal VAS with 8 cm longer, divided into 20 parts, unnumbered, with answers scored from 0 (total disagreement) to 20 (total agreement). VAS is a scale derived from Likert scale, showing to be more sensitive to detect small differences, and might also be more reliable and valid [12, 13]. Face and content validity of each questionnaire were assessed by an expert panel formed by pharmacologists and pharmacists specialists. A language and psychology professors analysed the questionnaire, to evaluate linguistic validity and comprehensibility.

2.3. Pilot - study design

Questionnaires were delivered to hospital pharmacists accompanied with a cover letter, which described study objectives and enhanced the importance of participation of each health professional. To assess questionnaires reproducibility, questionnaires were delivered to each professional twice, with an interval of two to four weeks.

2.4. Statistical analysis

Inter question reproducibility was assessed by test-retest the questionnaires delivered to pharmacists and by calculating intra-class correlation coefficient with a 95% confidence interval for each question [15,16]. Data analysis was performed using the Statistical Package for Social Sciences, version 18.0 (SPSS Inc).

Results

31 pharmacists have participated in this study, and table 1 shows the socio-demographic and professional characteristics of all participants.

Reproducibility of attitudes represented in the 17 statements of section 2 of the questionnaire, were demonstrated by ICC between two questionnaires answered by the same participant. The highest ICC registered were related to dispensing process, 0,958 and 0,765, for attitudes related to the importance of refused validation of prescription and antibiotic dispense when pharmacists considered that an antibiotic is inappropriate, and 0,971 for faith in innovation, and 0,803 related to attribution the cause of resistances to others, like veterinary use.

Table 1- Socio-demographic and professional data

Socio-demographic and professional data		n
Sex	Male	2
	Female	28
Age (years)	<29	1
	29-39	19
	>39	10
Job function	Technical director	6
	Pharmacist	21
Number of medicines dispensed/day	<100	4
	100-200	3
	>200	7
Number of antibiotics dispensed/day	<10	3
	10-20	2
	>20	9
Workplace	Hospital pharmacy	30
	With experience in community pharmacy	13

Discussion and conclusion

Results demonstrated that this questionnaire demonstrates good and excellent reproducibility to evaluate the attitudes and knowledge of hospital pharmacists related to antibiotic use and resistances. VAS scale is very useful for determination attitudes of health professionals, as demonstrated in previous studies [14], and may be due to: the objectivity of the questions being first assessed by experts in linguistic and psychology; the interest of professional about microbial resistance; the fact that questionnaire was also assessed by experts in pharmacology; the use of continuous VAS; and, the 2-4 week time interval between the 2 responses. This study has the limitation of dimension of sample, but it was a pilot study and we feel that it is important to perform this survey in a large number of professionals.

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