

Original Article

The “Perception of Musculoskeletal Risk Factors (PMRF)” for Operating Room Nurses (ORN): Translation and Cultural Adaption of the Questionnaire in the Greek Language

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Abstract

Background: There is a lack of information about musculoskeletal problems in perioperative nurses. The “Perception of Musculoskeletal Risk Factors” questionnaire for the perioperative nurses is a tool to detect the size and the characteristics of musculoskeletal complaints and identify ergonomic risk factors in the operating room or surroundings.

Aim: Objective of the study was the translation and cultural adaptation of perception questionnaire of perioperative nurses about the risk factors of musculoskeletal problems in the surgical environment.

Methodology: The guidelines of the World Health Organization for the forward and back translation of the questionnaire and for its cultural adaptation, was followed. Three independent translators translated the questionnaire from the source language (English) in the target language (Greek). Then a bilingual person who’s the native language was English was asked to make the back translation of the questionnaire. The back translation showed no significant differences with the original questionnaire and continued a pilot test on 10 perioperative nurses who approved the cultural adaptation. Then a semantic validation was followed.

Results: The majority of perioperative nurses indicated that the questionnaire was understood and a 90% considered it as a very good tool, finding them easily understandable and important for risk factors of musculoskeletal problems in the surgical environment.

Conclusions: The “Perception of Musculoskeletal Risk Factors” questionnaire for the perioperative nurses in the operating room environment, after the process of translation and cultural adaptation, is a reliable and available research instrument for Greek researchers.

Key-words: translation, cultural adaptation, perioperative nurses, musculoskeletal problems

Introduction

Musculoskeletal disorders related to work injuries include structures of the body such as joints, muscles, tendons, joints and nerves caused or exacerbated by the effects of the working environment (Sichletidis 2002). Ramazzini back in 1700, focusing on back pain mentioned about "violent, abnormal movements and odd jobs" due to which the internal balance of the body is affected (Linou 2005, Franco and Franco 2001). The significant influence that the environment has in the miscellaneous tasks (Fethke et al 2015, Lu et al 2015, Raffler et al 2015, Stergioulas 2005) is reported in several studies among nurses internationally, and the high prevalence of musculoskeletal problems among them is documented.

According to Sikira and Hanifas (2010) a percentage of 63.3% of female nurses in Nigeria are experiencing back pain. This percentage raised up to 77.9% for Chinese nurses (Chiou et al 1994), 81.31% for Turkish nurses (Karadag et al 1994), while the higher rates for musculoskeletal problems are reported among Koreans nurses (93.6%) to any area of the body (Smith et al 2005). In Italy that is a country with several similarities with Greece was found that 71% of people working in health care, reported at least one musculoskeletal problem related to work (Gerbanio and Violante 2008).

In Greece very few studies have been conducted that involve musculoskeletal disorders in health professionals. The first study was published by the Vasileiadou et al in 1995 reported primarily in the prevalence of low back pain. In backache focused and subsequent studies (Siamaga et al 2013, Konstantopoulou et al 2013, Kaukia et al 2010), also followed recordings of musculoskeletal disorders in nurses (Mpitsios et al 2013, Kakavelaki et al 2001) and the detection of risk factors (Katsavouni et al 2013, Fountouki and Theofanidis 2010). None of these studies that have been conducted so far in the country, has not focusing to musculoskeletal problems among perioperative nurses.

Aim

The aim of this study was the translation and cultural adaptation in Greek of the "Perception of Musculoskeletal Risk Factors" questionnaire for the perioperative nurses.

Methodology

The developers of the "Perception of Musculoskeletal Risk Factors (PMRF)" for Operating Room Nurses (ORN) questionnaire were informed via email about the purpose of research. They were asked for their permission to use the questionnaire as well as for the translation and cultural adaptation (PMRFQ for ORN) in Greek language. Permission was granted via e-mail (17-10-2014).

The instrument

Perception of Musculoskeletal Risk Factors (PMRF)" for Operating Room Nurses (ORN) questionnaire, is a self-administered questionnaire developed by the Sheikhzadeh A et al (2009) and it examines risk factors of musculoskeletal problems in the operating room environment. This questionnaire is a product of a critical review of the literature about musculoskeletal problems and for the organizational environment of the perioperative nurses, conducted by its developers. PMRF-ORN is consisted by three questionnaires, adapted to the activities of perioperative nurses.

The first part of the questionnaire refers to musculoskeletal problems in nine areas of the body, doctor visits and absence from work as a result of those problems. This questionnaire has been also used in the past to investigate musculoskeletal problems among nurses and assistant nurses (Hartrigsen et al 2005, Maul et al 2005, Josephson & Vingard 1998, Lusted et al 1996). Sheikhzadeh A et al, added an extra section to collect information on specific activities that are taking place within the operating room environment and perioperative nurses argue that contribute to musculoskeletal problems, as they see from their work.

In the second part a questionnaire for the job description and the assessment of occupational risk factors (Halpern et al 2001) was incorporated, after eliminating three items which were not applicable for perioperative nurses. This was an attempt to gather a much information they could on tasks and performance of duties of perioperative nurses in various poses. The questionnaire includes 26 questions. Five of those are related to the organization of work with answers (yes / no) and 21 questions on a 6 point scale, associated with posture (4 questions), the

characteristics of the load (3 questions), hardware and operating activities (7 questions), the position of the body (3 questions) and environmental factors (4 questions).

Finally, a psychometric evaluation questionnaire on the organization and job satisfaction of nurses (Saulter et al 1997) was incorporated, adopted for the environment and the activities of perioperative nurses. This questionnaire assessed four dimensions, administration, payments, workstatus and interactions they receive from working as perioperative nurses. The Cronbach's a score used to test the reliability of a psychometric assessment questionnaire. The questionnaire psychometric evaluation the Cronbach's a reliability index was high and above the acceptable limit of 0,7 for each of the four dimensions. For the full questionnaire the Cronbach's a coefficient was equal to 0,75.

Steps of translation

The instructions of the World Health Organization (http://www.who.int/substance_abuse/research_tools/translation/en/) were followed for the translation of the questionnaire. Two independent translations from the original English text in the Greek language were conducted by two healthcare professionals. After comparing the obtained translations, a third health professional was asked to confirm the version was created.

Then a backward translation of this version was conducted, from a bilingual person whose native language was English and was a professional translator. The original version of the questionnaire was not known to the translator. The backward translation was sent to authors for comment, who adopted the new version and the pilot test of the questionnaire in the Greek language.

Cultural adaption

A preferred sample of ten perioperative nurses was selected, from the Panarkadian general hospital in Tripolis in Greece, for a pilot test of the questionnaire to be conducted. Demographic characteristics were at a wide range. A form of the final translated and cultural adapted version was applied.

Native language of the participants was Greek and were asked to identify if the language used in the translation was simple and if the formulated

questions were suitable for the perioperative environment, and on the other hand if the translation was culturally accepted.

The researcher observed the process and in order to conduct the cognitive debriefing distribute the questionnaires himself explaining and asking participants to say if they had difficulties in understanding the items. In case of difficulties perioperative nurses were asked to suggest alternative wordings in an effort of the cognitive debriefing of the questionnaire. Some minimal corrections were made in accordance with the proposals of perioperative nurses. Therefore, the final version of the Greek version of PMRFQ questionnaire ORN produced.

Data collection

The willingness of perioperative nurses to participate in the investigation by completing a self-administered questionnaire was the dominant feature of the collection of data. Sample selection criteria included ability to speak, understand and read Greek and to have Greek as their native language, to be appointed officials in the national health system, work as perioperative nurses, not diagnosed or not be under psychiatric disease treatment and have given their written consent for participation in this study. The response rate was 100%, and the sample consisted by two representatives of the male gender and 8 female. The mean age of participants was 42.7 years (SD = 5,5 years).

Ethics

All the fundamental principles of ethics were followed while this study was conducted. Permission from the scientific committee, as well as from and management board of the general hospital to allow the conduction of this study in the operating room, was asked and was granted. Researchers engaged that the information and the extracted data will be used exclusively for the purposes of this study and the hospital will not be burdened financially. The participants signed a consent form for participating in the study and were assured that the participation was anonymous.

Results

The translation of the questionnaire was conducted in accordance with the minimum criteria, which included the effort to avoid disrupting the key features of the initial questionnaire but all the necessary changes to be

made in adapt to Greek reality. Between the first two independent translations were produced, there were significant differences in the content and this resulted in the creation of a reconciled version.

As for the cultural adaptation of the questionnaire as perioperative nurses found the questionnaire mostly easy to complete. Problems identified were in the question about working hours, since in national health system of our country does have part-time staff this question isn't applicable, but the item was maintained for perioperative nurses those who are entitled reduced shifts from 2 to 4 hours for two years depending on the age of the child (1-4 years). The average completion time was 30 minutes. Participants agreed that they found the questionnaire easy, understandable and very good regarding circumstances and processes that are taking place in an operating room.

After analyzing "General Impression Instrument" we can support that the instrument is accepted by perioperative nurses, as a measurement tool for

musculoskeletal problems. The 90% had no difficulty with the categories of questions while the 90% replied that the questions were understandable and very important to detect musculoskeletal factors in the operating room (Table 2).

Discussion

Perioperative nurses withstand daily high physical and psychological demands. In order for an open surgery to be performed requires a preparation, collecting trays with surgical instruments and packages of sterile clothing, each weighing about 4 to 13 kgr and transferring them from the storage of sterile materials in the operating rooms. These procedures require a manual handling by removing the disks from the shelves and putting them on auxiliary tables prepared for each day's surgeries. Lifting loads, pushing or pulling wheeled carts have been identified as conditions which can affect musculoskeletal problems (Trinkoff et al 2003, Smedley et al 2003, NRC 2001).

Table 1. Descriptive characteristics of the sample

Perioperative nurses N=10	
Age (M± SD)	(42,2 ± 5,5)
Sex	
Men	2
Women	8
BMI (M ± SD)	(24.7 ±4.3)
Hand	
Right handed	9
Left handed	1
Education	
Degree Nursing	10
MSc	3
PhD	0
Years of work (M ± SD)	(13 ± 9.1)

M = Mean SD = Standard Deviation

Table 2. Results from the phase semantic validation of the “Perception of Musculoskeletal Risk Factors” questionnaire

Items of General Impression Instrument	Answers	Answers of patients % (N=10)
What is your general opinion about the questionnaire?	➤ Very good	90.0
	➤ Good	10.0
Are the questions understandable?	➤ Yes	90.0
	➤ Difficult sometimes	10.0
Do you think that the questions are important for the detection of risk factors for musculoskeletal problems in the operating room?	➤ Very important	90.0
	➤ Not so important	10.0
Did the questions correspond to the particular conditions and processes that take place in an operating room?	➤ Yes	90.0
	➤ Sometimes	10.0
Did you have difficulties with the categories of answers?	➤ No	90.0
	➤ Sometimes	10.0

During surgery scrubbed nurses supply the surgical team with the necessary tools and instruments. Quite often except the prolonged standing the scrubbed nurses must take uncomfortable positions, while they holding tools within grip for the surgeon even for several seconds until he can get. In addition with their other hand they have to prepare the next move that will take place in accordance with the surgical times and this is done repeatedly during surgeries. The repetition of the movements (Smedley et al 2003) and uncomfortable positions (Koukoulaki 2014, Trinkoff et al 2003), have also been recognized as risk factors contributing to the occurrence of musculoskeletal problems.

Moreover, exposure to high triggers organizational factors have psychophysiological stress reactions (Herin et al 2011, Siergist et al 2004, Siergist 1996). The repetitive stress during surgeries may lead to the development or deterioration of musculoskeletal problems through processes of cell physiology and hormonal mechanisms (Allen et al 2008, Muraoka et al 2001, Bongers et al 1993) together with the physical state and the workload when

compared with other individual characteristics (Nuikka et al 2001).

Perioperative nurses have to face many difficulties due to the nature of work in psychometric, personal and environmental factors, and organizational changes intensify the problems, highlighting the significance of having a surgical coordinator (Karathanasi et al 2014a,b).

Occasionally, questionnaires about musculoskeletal problems have been used. Studies varying not only for their focus population, but for the detection general or a specific musculoskeletal problem and indicating risk factors, as well. The MUSIC-Nortalje questionnaire focuses on musculoskeletal disorders related to the spine and particularly at the lumbar spine and neck, for the general working population (Alipour et al 2007). Similarly the Nordic (NMQ), is designed as a screening tool in the prevalence of musculoskeletal problems by analyzing their relationship with the working environment. This questionnaire has been applied to a wide range of professional groups to evaluate musculoskeletal problems among them and in health professionals such as nurses (Antonopoulou et al

2004). Finally Cornell questionnaire is used to detect discomfort in the musculoskeletal system (MDQ) created for graduate students in ergonomics and used mainly in office workers (Hedge et al 1999). The Sheikhzadeh et al (2009) after a critical review of the literature selected items from musculoskeletal and organizational environment observed by clinical nurses, which are adapted to suit the activities of perioperative nurses and distributed this edition in fifty perioperative nurses in an academic orthopedic hospital in New York.

There are no studies on translation and cultural adaptation in Greece about musculoskeletal complaints screening questionnaire in perioperative nurses and identifying ergonomic risk factors in the operating room. Therefore a tool for this particular population, which is a subgroup of nurses, was needed in Greece. In this study the translation and cultural validation in Greek language of PMRFQ was presented. A future study will investigate the extend and characteristics of musculoskeletal symptoms of perioperative nurses, that are work-related and linked to psychometric properties, ergonomic risk factors and individual characteristics in a larger sample. Through the analysis of the scales, important results will be produced. Indicating how often and how different activities, which are taking place in the operating rooms, contribute to causing or worsening musculoskeletal problems.

Conclusions

PMRFQ is the first instrument in Greek language, for detection the extend and characteristics of musculoskeletal complaints of perioperative nurses as well as for identification of ergonomic risk factors in the operating room or surroundings. It is the result of a process in accordance with international guidelines, translation and cultural adaptation. Through this process, we are able to estimate the prevalence of musculoskeletal disorders in Greek perioperative nurses and the correlation of psychometric scale with labor data. The PMRFQ is a promising tool and can be used to identify practical and cost effective intervention to resolve musculoskeletal problems about perioperative nurses.

Further studies are needed to validate PMRFQ and in other health professionals working under the special characteristic of the surgery site.

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