Nurse Education Today 35 (2015) 444–449

Contents lists available at ScienceDirect

Nurse Education Today

journal homepage: www.elsevier.com/nedt

Nurses' knowledge and educational needs regarding genetics

Memnun Seven [a,*], Aygül Akyüz [b], Burcu Elbüken [c], Heather Skirton [d], Hatice Öztürk [c]

[a] Koç University, School of Nursing, Koç Universitesi Hemşirelik Yüksek Okulu, Güzelbahçe sokak no. 20, Nişantaşı, Şişli, İstanbul, Turkey
[b] Koç University, School of Nursing, Istanbul, Turkey
[c] Haydarpasa Gulhane Military Medical Academy Training and Research Hospital, Istanbul, Turkey
[d] Plymouth University Faculty of Health and Human Sciences, Plymouth, United Kingdom

ARTICLE INFO

Article history:
Accepted 12 November 2014

Keywords:
Genetic
Registered nurse
Knowledge
Survey
Confidence

SUMMARY

Background: Nurses now require a basic knowledge of genetics to provide patient care in a range of settings.
Objectives: To determine Turkish registered nurses' current knowledge and educational needs in relation to genetics.
Design: A descriptive, cross-sectional study.
Settings: Turkish registered nurses working in a university hospital in Turkey were recruited.
Participants: All registered nurses were invited to participate and 175 completed the study.
Methods: The survey instrument, basic knowledge of health genetics, confidence in knowledge and the nurses' need for genetics education were used to collect data.
Results: The majority (81.1%, $n = 142$) of participants indicated that genetics was not taught during their degree program, although 53.1% to 96% of respondents felt confident in defining different genetic concepts. The average genetics knowledge score was 6.89 ± 1.99 of a possible 11 (range 0–11). The majority (70.3%) expressed a strong wish to attend a continuing nursing education program in genetics.
Conclusions: The study shows that although Turkish nurses are not sufficiently knowledgeable to apply genetics in practice, they are willing to have more education to support their care of patients. Nurses need to have more education related to genetics in accordance with advances in human genetics to optimize health care.

Introduction

The Human Genome Project built on decades of genetics research and enhanced our understanding of human genetics (Thompson and Brooks, 2011; Godino et al., 2013a; Bancroft, 2013). Since completion of the project, there has been increasing development and availability of new treatments and expanded genetic testing options (Williamson and LeBlanc, 2008; Umberger et al., 2013). Although genetic health services have been provided by specialist genetics centers for several decades, genetic and genomic information is now being utilized in almost all healthcare settings (Daack-Hirsch et al., 2011; Bancroft, 2013). Therefore, all health care professionals should be able to provide genetic information, education and support to individuals with a current or potential genetic condition (Daack-Hirsch et al., 2011; Godino et al., 2013a). To achieve this, health professionals require a basic knowledge of genetic principles and the ability to integrate genomics into their daily clinical practice (Thompson and Brooks, 2011; Umberger et al., 2013; Boyes, 2013).

As part of the largest health care profession, nurses in all settings have an important role in improving health to prevent and reduce the burden of disease, and to educate patients and their families (Lea et al., 2011; Bancroft, 2013; Umberger et al., 2013). Developments in genetics, particularly in fields such as oncology, gastroenterology, pediatric, and prenatal care, have led to an increase in demand for genetic and genomic healthcare, requiring nurses to develop competences in both skills and knowledge regarding genetics to support their clinical practice (Burke and Kirk, 2006; Umberger et al., 2013). In addition, numerous authors (Jenkins and Calzone, 2007; Godino et al., 2013a; Thompson and Brooks, 2011) suggest that all nurses, regardless of country or practice setting, need to be appropriately trained in genetics and genomics in order to provide best practice for prevention, detection and/or treatment of disease. Unlike many other fields of nursing, genetics is relevant to every life stage, and therefore, it should be addressed across all patient groups from neonatal to geriatric care (Skirton et al., 2012a,b; Umberger et al., 2013).

Background

Although there have been recommendations to integrate genetics into the nursing curriculum for many years, there is some evidence that it has not been included in nursing education in any consistent

* Corresponding author. Tel.: +90 2123112659.
E-mail addresses: memnunseven@gmail.com (M. Seven), aygulakyuz@yahoo.com (A. Akyüz), burcuelbuken@gmail.com (B. Elbüken), heather.skirton@plymouth.ac.uk (H. Skirton), haozturk@gata.edu.tr (H. Öztürk).

http://dx.doi.org/10.1016/j.nedt.2014.11.008
0260-6917/

manner (Tomatir et al., 2006; Jenkins and Calzone, 2007; Umberger et al., 2013). Umberger et al. (2013) stated that there are several factors contributing to the lack of progress in integrating genetics/genomics into nursing education, such as a shortage of nursing faculty prepared to teach genetics and failure to recognize the value of genetics/genomics in nursing practice. The deficit in nursing education of genetics results in nurses having an insufficient knowledge of genetics as shown in studies conducted in different countries (Kim, 2003; Terzioğlu and Dinç, 2004; Tomatir et al., 2006; Vural et al., 2009; Gharaibeh et al., 2010; Godino et al., 2013a). Moreover, in some reviews, it is reported that nurses do not have adequate knowledge in specific areas (such as inheritance patterns, drawing a pedigree, utility of genetic tests, and ethical and legal issues) that would enable them to educate and consult patients and their family members appropriately (Burke and Kirk, 2006; Dodson and Lewallen, 2011; Gibbs, 2011).

Genetics/Genomics knowledge should not be merely included in educational programs without addressing the cultural context. It is important to conduct research in different countries in order to have a better understanding of the effect of genetics and genomics information from many perspectives (Skirton et al., 2012a,b). As a first step, it is thought that current knowledge and awareness of nurses towards genetics needs to be assessed to identify the changes needed in nursing education and to offer appropriate nursing education. Little research on genetics related issues in Turkish nurses or nursing students has been found and the few existing studies were conducted some years ago (Terzioğlu and Dinç, 2004; Tomatir et al., 2006; Vural et al., 2009). In the five years since that last study (Vural et al., 2009) was published, much has changed in the area of genetic healthcare and it was timely to conduct a further study.

The aim of this study was to investigate the current knowledge level of registered nurses in relation to genetics, to assess the self reported self-confidence of qualified nurses in defining basic concepts in genetics and to determine the educational needs of nurses for genetics knowledge in Turkey.

Methods

Study Design

This was a descriptive, cross-sectional study.

Participants

The study was carried out in a university hospital in İstanbul, Turkey in April 2014. All registered nurses working in the institution were eligible to participate. At the time of the study, there were a total of 345 nurses working in the hospital, however 55 nurses were unavailable due to absence for reasons such as maternity leave, paid or unpaid leave and were excluded from the study (due to long term absence from duty). A total of 175 (of a possible 290) nurses took part, a response rate of 60.3%.

Instrument

The study instrument comprised four sections, addressing demographic characteristics, genetics knowledge level, confidence in knowledge level, and the educational needs of nurses related to genetics (see Tables 1, 2, 3 and 4). The instrument was developed by the researchers based upon literature (Terzioğlu and Dinç, 2004; Tomatir et al., 2006; Daack-Hirsch et al., 2011; Skirton et al., 2012a,b; Godino et al., 2013a).

In the first section of the form, nurses were asked for demographic information, including information about their work settings. In the second section, nurses were asked to self-assess their basic knowledge of genetic concepts. A total of 12 concepts were included and nurses were asked whether they felt confident about their understanding of the concepts. An open-ended question asking nurses to list diseases related to genetics was included.

Table 1
Demographic background of female participants.

$n = 175$	n	%
Age (year)	30.3 ± 5.91	
Highest qualification in nursing		
Vocational high school	3	1.7
Associate degree nursing programs,	3	1.7
Baccalaureate nursing program	110	62.9
Master program	55	31.4
PhD program	4	2.3
An average time of working as a nurse (year) (1–27)	10.46 ± 6.64	
Area in which nurses' work		
Medicine (such as respiratory, neurology, gastroenterology)	48	27.7
Gynecology/Obstetrics	4	2.3
Neonatology/Pediatrics	8	4.6
Emergency and out-patient clinics	18	10.2
Intensive care	16	9.1
Cardiology/coronary care	14	8.0
Oncology/hematology	15	8.7
Surgery (such as orthopedic, plastic, ear–nose–throat surgery)	52	29.6

The knowledge level of nurses related to genetics was assessed in the third section. Nurses were asked to respond 'true', 'false' or 'do not know' to 11 statements regarding topics that included consanguineous marriage, preimplantation genetic diagnosis, prenatal screening tests, breast and ovarian cancer gene mutations, family history of breast, ovarian and colorectal cancers, and the relationship between genetics and multifactorial disorders. One point was given for each statement answered correctly; the total possible score was 11.

In the final section, we collected data by asking participants whether they felt the need for genetics education to help them in their daily nursing practice. A list of specific topics was provided. Options for answering these questions were given as 'I would like', 'I would not like' and 'it does not matter'.

The instrument was pilot tested with five nurses who were not planning to participate in the study to determine face validity and clarity of questions. Minor changes were made after this process.

Data Collection

The study was conducted after receiving approval from the institutional ethics committee. The researchers informed the nurses in all settings about the aim and method of the study. Nurses who were willing to participate in the study were given the questionnaire forms and information about completing the form. Return of the completed questionnaires to the researchers was deemed to indicate consent.

Table 2
Educational background and opinion of participants on genetics in nursing education.

$n = 175$	n	%
Having genetics course (or at some point within the curriculum) during nursing education		
No	143	81.7
Few hours in some other courses (such as obstetrics, medicine etc.)	32	18.3
Opinions on genetics science knowledge in nursing education[a]		
It was enough in the nursing education	18	20.3
It should be covered in more detail in the nursing education	108	61.7
It should be offered as a part of continuing nursing education	87	49.7
It should be covered in masters degree program in nursing	38	21.7
Wish to have a continuing nursing education regarding genetics		
Yes	123	70.3
No	52	29.7

[a] Participants could choose more than one answer.