

The Transcultural Medical Care (TOM) mobile application as a tool facilitating the provision of transcultural medical services – a description of its use and functionalities

Mobilna aplikacja TOM (Transkulturowa opieka medyczna) jako narzędzie wspomagające świadczenie transkulturowych usług medycznych – opis zastosowania i funkcjonalności

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Słowa kluczowe: pielęgniarstwo transkulturowe, transkulturowa opieka medyczna, jakość w opiece medycznej.

Abstract

Introduction: Multicultural nursing care should be based on knowledge about cultural and religious beliefs and values, as well as the understanding of the influence of these unique customs and ways of thinking on the matters of health, life, disease, and dying.

Aim of the research: To design and create an application as a tool to facilitate the work and improve the level of knowledge in healthcare in the field of transcultural medical care.

Material and methods: The method of scientific literature review was used in choosing the thematic content. The review included a choice of content in terms of cultural and religious determinants in medical care for selected groups of patients.

Results: The result of the research was the development of the TOM (Transcultural Medical Care) application tool, which contains the most important information in terms of the medical care of transcultural patients. The timetable and performance of the pre-implementation works: choice of religions, choice list of subjects, selecting the content for individual thematic blocks, final stage in this part of the research was to translate the contents into English.

Conclusions: The application is a valuable tool, which can be used to obtain cultural competences by medical personnel during their education, and is also a tool that improves the professionalism amongst the medical workers.

Streszczenie

Wprowadzenie: Wielokulturowa opieka pielęgniarska powinna opierać się zarówno na wiedzy o wierzeniach i wartościach kulturowych oraz religijnych, jak i zrozumieniu wpływu tych wyjątkowych zwyczajów i sposobów myślenia na sprawy zdrowia, życia, choroby i umierania. Kontakt personelu medycznego z pacjentem obcym kulturowo i religijnie jest dużym wyzwaniem, a znajomość kultur jest podstawowym czynnikiem, który może wpłynąć na jakość i bezpieczeństwo transkulturowej opieki medycznej.

Cel pracy: Zaprojektowanie i stworzenie aplikacji jako narzędzia ułatwiającego pracę i podnoszącego poziom wiedzy w opiece zdrowotnej w zakresie transkulturowej opieki medycznej.

Materiał i metody: Przy wyborze treści tematycznych zastosowano metodę przeglądu literatury naukowej. W przeglądzie dokonano wyboru treści pod kątem uwarunkowań kulturowych i religijnych w opiece medycznej dla wybranych grup pacjentów.

Wyniki: Efektem przeprowadzonych badań było opracowanie narzędzia aplikacyjnego TOM (*Transcultural Medical Care*), które zawiera najważniejsze informacje z zakresu opieki medycznej nad pacjentem transkulturowym. Harmonogram i przeprowadzenie prac przedwdrożeniowych: wybór religii, lista wyboru przedmiotów, dobór treści do poszczególnych bloków tematycznych. Ostatnim etapem tej części badań było przetłumaczenie treści na język angielski.

Wnioski: Aplikacja jest cennym narzędziem, które może być wykorzystywane do zdobywania kompetencji kulturowych przez personel medyczny w trakcie edukacji, a także jest narzędziem podnoszącym profesjonalizm wśród pracowników medycznych. Prosta i przejrzysta w obsłudze matryca aplikacji, dzięki odpowiednim blokom tematycznym przypisanym do poszczególnych przekonań religijnych, pomaga skrócić czas poszukiwania informacji w sytuacjach stresowych i wymagających natychmiastowej interwencji.

Introduction

Migration processes, medical tourism, and the cultural diversity of societies impose adaptation of the process of providing medical services to the cultural and social needs. The contact of medical personnel with a culturally and religiously foreign patient is a great challenge, and knowledge of cultures is the primary factor that can influence the quality and safety of transcultural medical care [1–3].

Furthermore, in order to understand the notion of quality, a proper relationship between the patient and the medical personnel, which includes access to care in various social groups, is very important [4, 5]. A quality approach to creating lasting and long-term relationships would not be possible without elements such as a personalised approach, concern and empathy, and, above all, the feeling of trust during care [6–8].

Emphasizing the necessity for providing quality medical care and building good relationships in the context of transcultural patients seems to be the correct approach, especially because the reports from a number of studies indicate that migrants have difficult access to quality medical care in comparison to the indigenous inhabitants [9, 10]. Furthermore, one can still find documents on phenomena such as anxieties related to unequal access to health and health services of patients who originate from different cultural and religious circles [11]), or older people who are part of minority groups [12].

Transcultural nursing – terminology and definitions

According to Madeleine Leininger, transcultural nursing is an area of research and practice concentrated on the values, beliefs, and practices of individuals or groups of different cultures [13]. As Seisser [14] emphasizes, the growing need for transcultural medical services imposes the necessity to educate and form medical personnel sensitive to the cultural needs of patients.

On a world scale, nurses comprise the greatest percentage of personnel dealing with patients. Obtaining proper knowledge on the cultural and religious determinants in health and disease can result in having a well-prepared group of entities who understand the needs of others and provide safe and high-quality “transmedical” services in the healthcare system [15]. The aim of transcultural medical care is thus to provide proper care, in line with the culture of a given individual or group [16].

Furthermore, as Leininger [17] stresses, transcultural nursing is responsible for the promotion of culturally accordant medical services, which are of high quality and safe for patients from similar or differing cultural groups.

Taking the varied system of teaching medical personnel into consideration, and their professional experience, healthcare system professionals may come

across difficulties in adapting their skills to the needs of transcultural patients [15]. Nursing study curricula should be equipped with content on cultures, transcultural lectures, and the learning of languages [18], so that students can gain the proper competences and skills to recognise the needs that result from a given culture and the skills that will allow them to react effectively [19]. Furthermore, the necessity to develop new cultural competences results from the fact that medical personnel carry out medical services not only for various patients, but also, through migration processes, in multicultural medical teams, and their goal should be satisfactory clinical relationships [1, 20, 21].

If there is a need to educate a professionally sensitive personnel, then lifelong education is a tool that can help develop the present and future practice of transcultural medical care [19]. The fact that nurses work within groups of patients from different cultural and religious circles is why they have to be aware of the differences that arise in relations, inclinations, or the level of tolerance towards healthcare and medical actions [22].

Aim of the research

The aim of the research was to design and create an application as a tool to facilitate the work and improve the level of knowledge in healthcare in the field of transcultural medical care – the TOM (Transcultural Medical Care) application.

Material and methods

The design and research work was carried out between September and December 2019. Before starting the pre-implementation work, an analysis of the market in terms of the demand for the results of the project was made. The project of creating a mobile application was implemented within the “Inkubator Innowacyjności 2.0” programme. The authors obtained consent for presenting the results of their work in scientific articles, at scientific conferences, and others.

Research conducted by Dr Beata Naworska [23] amongst medical personnel proves that 80% of the participants find education in terms of transculturality to be vital and much needed.

A survey of the available applications aimed at medical professionals did not show any tools/applications that might have been a solution to the problem of multiculturalism in medical care.

The project manager was Professor Grażyna Nowak-Starz.

The timetable and performance of the pre-implementation works

1. The choice of religions

The first stage of work was the choice of religions. In order to do that, the following 9 religions were

qualified for the study: Buddhism, Greek Catholic, Hinduism, Islam, Judaism, Catholicism, Orthodoxy, Protestantism, Jehovah's Witnesses, and Romani.

2. List of subjects

The next stage of the research was the choice of appropriate content that would concisely discuss the most important issues in transcultural medical care. Based on the analysis of the components of the treatment and nursing processes, and our own observation, 14 thematic blocks were singled out, which form the source of primary knowledge in terms of transcultural healthcare for medical professionals (Table 1).

3. Selecting content for individual thematic blocks

The method of scientific literature review was used in choosing the thematic content. The review included a choice of content in terms of cultural and religious determinants in medical care for selected groups of patients (review articles, case studies, or guidelines and recommendations).

The search and the obtaining of written works was based on the categorisation of available content using search criteria. The following thematic list was used as the search criteria: transcultural medical care, transcultural patient, transculturality in nursing care, transculturality in obstetric care, transcultural communication with a patient, religious determinants in the care of a patient, faith (...given religion, given culture...), nursing care of a religious patient (...given religion, given culture...).

With the obtained literature, a review was performed of the titles, review paper abstracts, and tables of contents of monographs related to the present study, using the PubMed database. The last stage of choosing the thematic content was a detailed analysis of the qualified text, which consisted of extracting the most significant content, from the research point of view. Content from 10 years ago at most was used for the project. The authors assumed that the traditions of a given religion do not become entirely out-of-date, whereas social processes influence the change in the way they are practised. That is why conversation with a multicultural patient about their preferences plays the leading role in the care of a multicultural patient. In order to facilitate the process of data extraction, a form was designed in a Microsoft Excel document, which contained data such as the religion/cultural-and-religious belief, and a list of subjects divided into a general version and an expanded one with a fuller description and with explanations.

4. The final stage in this part of the research was to translate the contents into English.

Results

The result of the research was the development of the TOM application tool (Figure 1), which contains the most important information in terms of the medical care of a transcultural patient. The application is

Table 1. The list of thematic blocks available in the TOM application. Source: own work

No.	List of subjects
1	Abortion
2	Contraception
3	Diet
4	Euthanasia
5	<i>In vitro</i>
6	Contact with a spiritual person
7	Medical care, nursing
8	Organising the hospital environment, providing space and privacy
9	Birth
10	Patient-medical personnel relationship
11	Death/post-mortem care
12	Futile medical care
13	Blood transfusion
14	Transplantation

available free-of-charge at the Google Play store. The application can be used on smartphones with an Android operating system. The application does not require the user to log in or to create a user account.

The TOM application won the main prize in the INTARG 2020 Social Innovation Competition - Special Edition of the 13th International Invention and Innovation Fair and a prize awarded by the Polonia International Foundation. Education and Science awarded a Diploma for high-ranking prizes obtained in connection with the presentation of the TOM Application at the International Inventiveness Fair.

The individual functions of the application, along with screenshots, will be presented below.

The "Change" menu is an important function of the application because it allows the user to navigate to the "Settings" function and to make the basic choices in terms of the religion, the language, and the thematic preferences. The "Change" menu takes the user to the main Settings of the application (Figure 2).

The filter settings in the application allow the user to do the following:

- Choose a religion – to do that, the user will find a set of 14 religions/cultural-and religious beliefs in the "Religions" section, sorted in alphabetical order, along with a symbol assigned to a given faith (Figure 3).
- Choose their own preferences – the "Preferences" section allows the user to select the language of the application (Polish/English), as well as to personalise the thematic contents that appear within each religion-or-beliefs group (Figure 4). Below the "Language" function, one can find

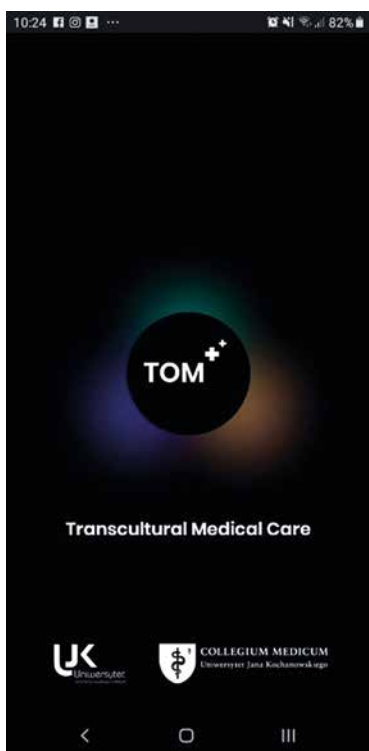


Figure 1. The main screen of the TOM application, the welcome screen. Source: own work

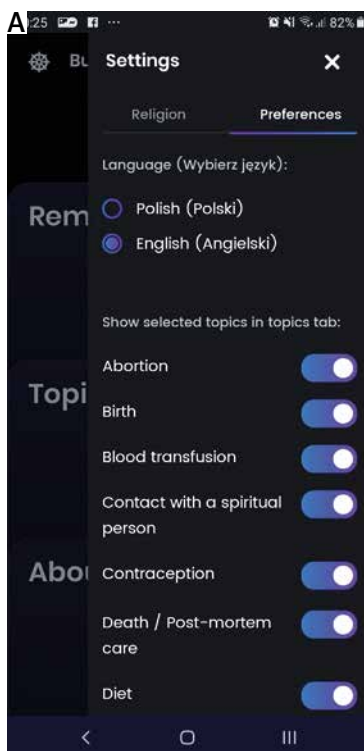


Figure 2. The “Change” function (A) and the “Settings” function for the main filters of the TOM application (B). Source: own work

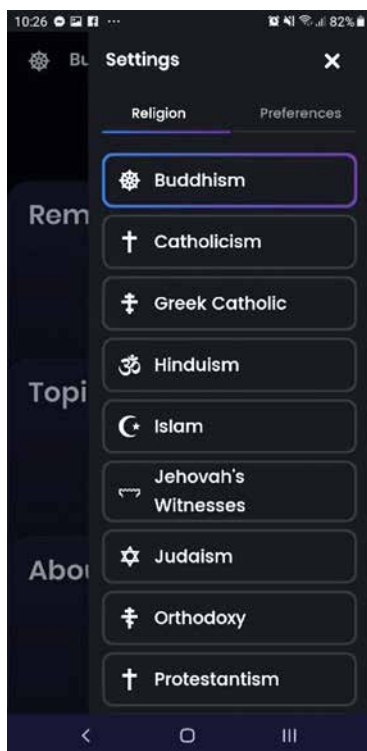


Figure 3. The religions, along with their symbols, available in the “Religions” section. Source: own work

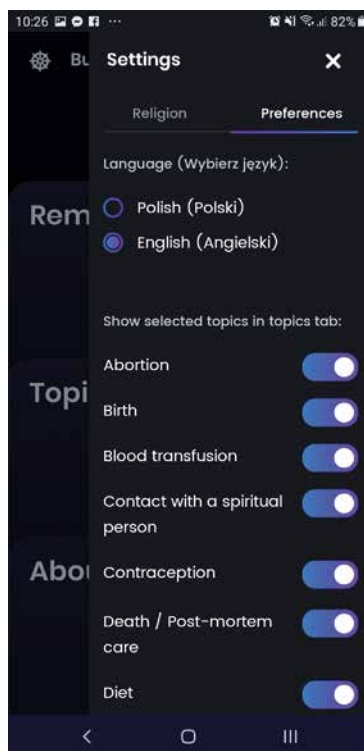


Figure 4. The “Preferences” section, along with the “Language” function. Source: own work

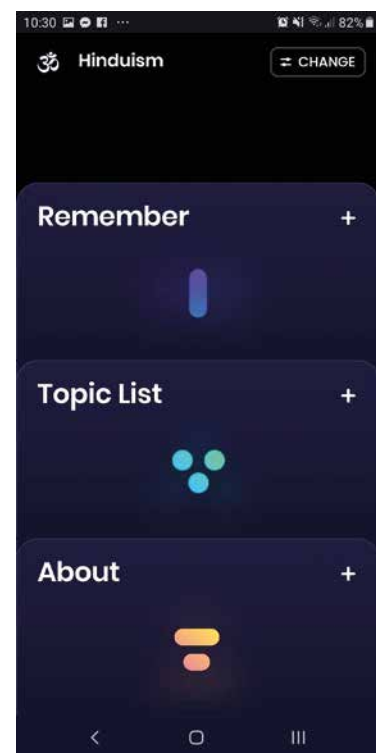
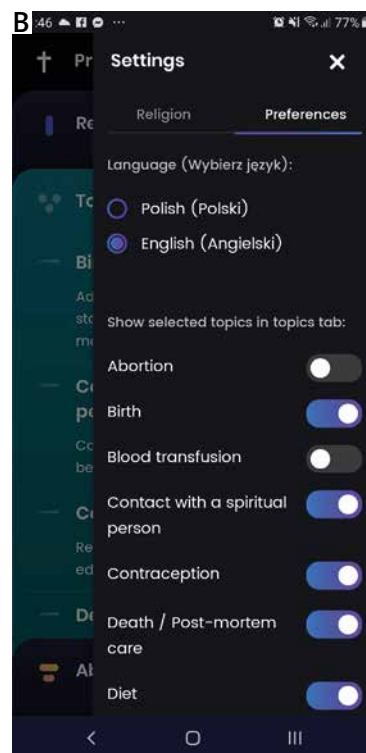


Figure 5. The “Preferences” section, along with the “Show selected topics in topics tab” function. Source: own work

Figure 6. The main screen of the application. Source: own work

the “Show selected topics in topics tab” function, which contains a list of 14 topics sorted alphabetically, along with blue toggle switches (Figure 5). By tapping a toggle, the user can eliminate a selected thematic block that is not of interest to them at present, from the description of a given religion. In this way, the eliminated thematic blocks will not be visible in the “Topic List”. The functionality of the application makes it possible for a medical worker to adjust the contents to the medical duties that they are performing (doctor, nurse, obstetrician, etc.).

After having chosen the religion, language, and the thematic preferences, the user is taken to the main screen in the application. On the main screen of the application, one can find the following 3 main views describing the influence of a religion/cultural-and-religious belief on their behaviour during a disease: Remember, Topic list, and About (Figure 6).

The “Remember” view is of particular use in situations requiring the undertaking of urgent medical actions. The contents found within it are related to the most important recommendations in terms of care, communication, and bioethical matters. Those contents were formulated using a single sentence, and thanks to that the clarity of the most important information was maintained.

The “Topic list” view is a broader description of the cultural and religious determinants in health and disease. Fourteen thematic blocks were placed here

in alphabetical order along with a description and explanation. The contents of each thematic block contain a general description, which is visible underneath each topic (Figure 7). The general description is a short answer or a concise description, providing the reader with the possibility to obtain basic knowledge.

Additionally, next to each topic header (on the right side), a function was placed which allows the user to navigate to a detailed description, which is an expansion to the topic or a statement of reasons. In this way, the user can make an in-depth analysis of an issue in order to improve their knowledge of the customs, and what is more important, they can better understand the behaviours, gestures, or reactions specific to a given religion or culture.

The contents included in the “Topic list” view can be divided into a number of important thematic groups, the inclusion of which in the care process is a significant element on the road to building good-quality and safe transcultural medical services.

The first group are bioethical topics such as abortion, contraception, euthanasia, *in vitro*, transplantation, blood transfusion, and futile medical care. In these cases, the general description is a Yes/No answer. The statement of reasons for a given religion’s position in terms of bioethics can be found in the detailed description (Figure 8).

The next thematic group comprises content regarding recommendations for medical care, i.e. the

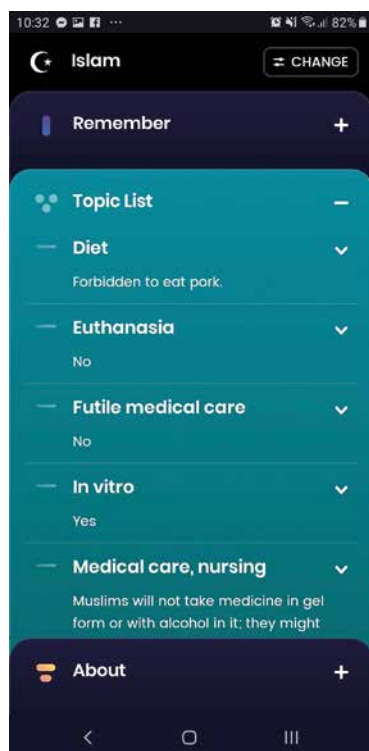


Figure 7. The Topic list view with a general explanation, exemplified by the Islam religion. Source: own work

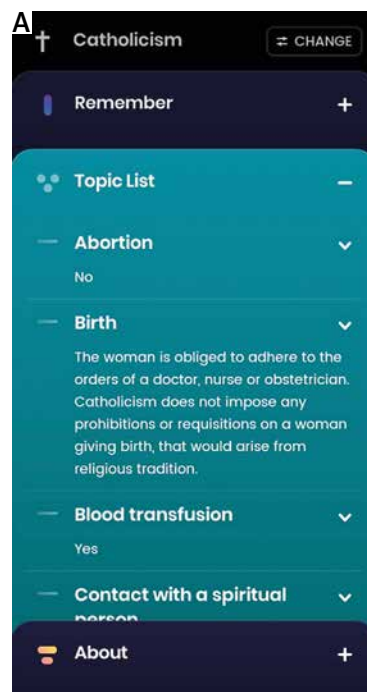


Figure 8. Contents included in the “Abortion” view – a general description on the left and a detailed description on the right. Source: own work

diet, medical care, nursing, giving birth, organising the hospital surroundings, death, and post-mortem care.

From the point of view of medical professionals' everyday practice, the “Medical care/nursing” view is especially important. The information contained within is a compendium of knowledge in the field of basic medical actions such as taking – and the possibility of refusing to take – medications, performing medical and nursing procedures on a patient's body (the correct side of the patient's body), the gender of the personnel who are taking care of the patient, maintaining the hygiene and cleanliness of a patient's body, adjusting the timetable of medical actions to the religious practices, the presence of religious symbols in a patient's room, or the presence and activity of family members in the process of treatment. It should be emphasized that recommendations regarding the conduct of medical personnel and information on the way patients behave during a given religion's holidays, such as Sabbath, Ramadan, or Good Friday, are also included in the application.

The final group includes such thematic blocks as contact with a spiritual person and the patient/medical personnel relationships. The inclusion in the application content related to conveying information about the health condition to other members of the family, the presence of family during tests and proce-

dures, having decisions made by the patient or other family members in regard to health, or the need for contact with a spiritual person emphasises how important understanding someone's culture and principles of communication, and the social hierarchy, is in transcultural relations.

An added value of the application is the inclusion of certain hints connected with the medical staff's culture of behaviour in front of a patient and their family, restraint in making certain gestures and uttering certain words, and the meaning of a patient's gestures and facial expressions in the “Patient – Medical personnel relationship” view. One should remember that maintaining eye contact with another person, reaching out to shake someone's hand as a greeting, or speaking in a loud voice and excessive gesticulation are not always desired displays in a given religion, because sometimes they might cause a patient to feel anxious and threatened.

In the “About” view in the application, the user also has a chance to familiarise themselves with a brief description of a given religion/cultural-and-religious belief (Figure 9).

Discussion

The clash of a carer's and patient's different world-views, values, or behaviour patterns can lead to so-

called culture shock, which eventually leads to the feeling of hopelessness in interpersonal contacts. Several reports indicate that patients have experienced the phenomenon of ethnocentrism, which impacted negatively on the relationship during therapy and hindered the process of social assimilation [2, 24, 25].

That is why when taking care of a person of a different culture and religion to one's own, knowledge, understanding, and respect of the reality of others seem to be useful because multicultural education of medical personnel has the noble goal of providing effective and equal medical care to any patient, and especially to patients from culturally and linguistically diverse (CALD) environments [26].

Promoting culture education initiatives amongst healthcare workers is becoming more common and is helpful in striving to implement effective health services. It is because in the research of Shepherd *et al.* [27] and Cruz *et al.* [28] medical workers defined effective medical care from a clinical point of view, so having the knowledge of cultures (norms and customs) which is extremely useful in achieving the desired health effects.

The TOM application also contains content related to eating habits and the rules of preparing and consuming meals by patients of a given cultural-and-religious belief. Knowing the nutritional preferences, or the preference when it comes to the gender of the medical personnel in a treatment room, eliminates the risk of patients experiencing a feeling of their identity being threatened or of no respect for their beliefs and practices. McClimens *et al.* emphasized that safe cultural care should be based on the knowledge of cultural and religious preferences, which is a sign of respect for a culture and does not lead to situations of ridicule and disregard of a patient [29].

The meaningfulness of respect towards an older person in certain cultural and religious circles, and within that the necessity to have the medical personnel include their role in the process of a patient's treatment and decision-making, was also stressed in the application. It is quite frequently the case that young people rely on the opinion of the elders during treatment, in that way recognising their authority and role as a spokesperson and decision-maker, as it is for example in Muslim culture [30].

Amiri *et al.* [13] emphasized in their research that the lack of knowledge in terms of cultural and religious customs or establishing a patient/medical personnel relationship between 2 cultures impacts the occurrence of problems that medical workers have when taking care of immigrants.

To ensure a feeling of mental balance and safety for the patient, a medical team should have the tools to assess the possibilities of choosing interventions adequate to the transcultural health needs [31, 32]. As one may conclude from the research of Červený *et al.* [33], conducted in 25 European countries, over 60% of



Figure 9. Contents included in the “About” view, exemplified by the Greek Catholic religion. Source: own work

professionally active nurses take care of patients from different cultural and religious groups. Amongst the challenges they meet in transcultural care, they mention not only the language, but also the lack of knowledge about a religion/culture and not being prepared to provide culturally adequate care.

Religion is ever more frequently becoming a factor that determines and outlines the character and type of medical care. This care will not, however, be safe for a patient unless we raise awareness and knowledge regarding interdisciplinary and transcultural medical care amongst medical personnel [19, 22].

The need for lifelong learning using various kinds of tools has been accentuated in the research conducted in KP Santa Clara. This is because the nurses were of the opinion that improving cultural competences is necessary, and as many as 77% of the respondents expressed interest in further education in this regard, bearing in mind the good of the patient and the professionalism of multicultural care [34].

Thus, the application is a result of the needs of the healthcare market and aims to serve the good and safety of the patient. The availability of the contents using a mobile application can help in equalising the health chances of each patient and in eliminating the

disproportion in the quality of provided services. The results of a number of studies indicate that ineffective cultural care leads to the occurrence of differences in health care and sub-optimal health results, especially amongst immigrants [9, 10, 35, 36]. The research of Alzaye *et al.* [37] also proves that in taking care of culturally and linguistically diverse patients, there are certain barriers that hinder the effectiveness of clinical actions, and providing training for the medical worker's cultural competences can prevent that.

That is why transcultural medical care must take into consideration the bearing of a patient and their reactions and attitude towards the proposed treatments, and the ability of the personnel to adjust to the diverseness in care becomes key in building the quality of medical services [22].

Using mobile devices, smartphones, and applications in the professional practice enables students and medical workers to have access to up-to-date contents based on proof. Furthermore, a mobile process of obtaining knowledge influences one's confidence and the certainty of one's clinical decisions [38]. The results of research carried out among first-semester students of nursing in the United States showed that students found smartphone applications for healthcare valuable tools aiding clinical work, and over 90% of the respondents declared their willingness to continue using the available applications. One of the students who participated in the study indicated that thanks to using the available applications they had the possibility to learn how to communicate with people of various races and different cultures [39].

Other studies also suggest that access to up-to-date clinical knowledge using applications helps improve the safety and quality of nursing care [40]. Furthermore, great interest [41] can be observed regarding the use of applications in professional practice, which may concern 80% of nursing personnel [42]. Using applications in a clinical environment is helpful to students when it comes to making decisions in providing care to any patient [43].

The opinions of students from the research of Georg *et al.* are proof of the positive influence of using applications in contact with patients because the students reported the patients' positive acceptance of using an application during treatment, because they were happy with being able to obtain information quickly, and it gave them a feeling of happiness and safety [39].

Conclusions

The mobile application allows access to information regarding transcultural recommendations in medical care anywhere and at any time. The application is a valuable tool that can be used to obtain cultural competences by medical personnel during their

education, and it is also a tool that eliminates the lack of knowledge in this field and improves the professionalism amongst medical workers. The application is also an answer to the quality challenges which the healthcare system has been struggling with for years. Because designing quality, where the patient is at the centre, also a "culturally different" patient, forces an update of knowledge and a systematic implementation of it into taking care of a transcultural patient.

Conflict of interest

The authors declare no conflict of interest.

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