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The knowledge and attitudes of Saudi and Egyptian professionals and non-professionals toward vitiligo patients: A comparative quasi-experimental study

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***Abstract*---**Introduction: Vitiligo is a protracted skin disorder in which areas of skin lose their color. Numerous research has revealed that psychosocial therapies can lessen the effect of social stigma on the degree of vitiligo impairment. Objective: This study examines how an educational intervention affects the knowledge and attitudes of Egyptian and Saudi professionals and non-professionals toward patients with vitiligo. Materials and Methods: A quantitative, comparative quasi-experimental study was conducted with 357 participants at the College of Nursing-Jeddah (CON-J), Saudi Arabia, and the Faculty of Nursing, Menoufia University, Egypt. To complete the study, three valid and reliable tools were utilized: demographic and personal characteristics, the IOF Scale, and knowledge and attitudes. Results: A high percentage of Egyptians (81.4%) and Saudis (81.1%) had a higher education level, and nearly two-thirds (66.5%) were single. The total sample (n = 375) spanned the ages of 20 to 50

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years. Most (94.6%) Saudis live in cities, 82.2% are health professionals, and nearly two-thirds (69.7%) are middle-class. After the intervention, there was a high level of knowledge difference between Egyptian and Saudi participants (professional and non-professional) at (p = 0.021); (p = .001), respectively. In conclusion, the educational program was effective in improving knowledge and attitudes toward vitiligo patients among Saudi and Egyptian professionals and non-professionals. Research into the effectiveness of public awareness on the quality of life of vitiligo patients is highly recommended to determine what factors impact their search for knowledge and attitudes toward the disease.

***Keywords*---**vitiligo, knowledge, attitudes, professional, non-professionals, Saudis, Egyptian.

Key Points

- Professionals and non-professionals in Saudi Arabia and Egypt benefited from the educational program regarding vitiligo.
- Promoting health awareness programs and correcting misconceptions about vitiligo in the public is crucial.
- A future research study is needed to determine if public awareness impacts the quality of life and satisfaction level of patients with vitiligo to their care.

Introduction

A global prevalence estimate for vitiligo is 0.1 to 8%, causing pigment loss and irregular pale patches on the skin [1]. About 12.6% of Saudi dermatologists saw more than 10 vitiligo patients each week, whereas 40% saw five to ten per week [2]. While in Egypt, prevalence rates were estimated at 1.2% [3]. Studies have found that Saudis and Egyptians are unaware of vitiligo, which is believed to be a major factor in the social stigma attached to the disease. Oftentimes, people believe that a particular kind of food or drink is the cause, that poor personal hygiene causes the disease, and that it is hereditary, and that skin cancer may result from it [4]. Moreover, Saudis consider Vitiligo a form of divine punishment, curse, mystery, and spiritual attack [5]. Consequently, the objective of the study is to raise public knowledge and attitudes toward people who have vitiligo through an educational campaign.

Diagnostically, Vitiligo comes in two forms: segmental vitiligo (SV) and nonsegmental vitiligo (NSV). There are three types of generalized vitiligo: acrofacial, universal, and generalized [6]. Vitiligo is defined as a condition where areas of skin have lost their color over time. The damaged skin areas often have sharp edges and turn white. The hair on the skin might also become white [7]. Furthermore, the interior of the nose and mouth may be impacted. [8]. Usually, both sides of the body are affected. The spots typically start on skin that has been exposed to the sun.[9]. People with dark skin are more prone to it [10]. Vitiligo can

cause psychological distress, and those who suffer from it may be stigmatized by society [11].

As a result, recognizing and treating psychological problems may improve the treatment outcome for these patients [12]. Hence, one of the most prevalent deforming skin conditions globally is vitiligo. As a result, there are psychological consequences such as mild embarrassment, loss of confidence, social anxiety, depression, and anger, especially for those with patches of exposed skin [13]. Since the disease affects parts of the skin that are visible to others, patients are forced to adjust not only to its effects but also to the reactions of others to their disorder, which can result in psychosocial distress and social stigma. In addition, societal, spiritual, and intertribal aspects show a important role in the stigma of patients and their families lifestyles will change significantly because of social discrimination: from clothing choice, sunscreen use, and Cosmetic concealment of lesions to prevent outside involvement and social activities. [14].

As a result, psychotropic agents and psychotherapeutic interventions may be effective in treating the psychosocial and psychiatric comorbidities of vitiligo patients. In addition, psychosocial interventions have been shown to decrease the effects of public stigma on the level of disability caused by vitiligo [13]. Nurses are in a unique position to deliver high-quality mental health care to individuals in their communities. It is well established that providing supportive services for vitiligo disease improves the quality of life for patients, families, and communities [14]. One of these social interventions is conducting psychoeducational interventions, which improve the knowledge and attitudes of public toward patients with vitiligo [15, 16]. Since it is mostly dependent on the social acceptance of patients and connected to awareness of this disease in a specific populace, these programs are reported to result a positive impact on the patient's health, quality of life, self-esteem, and treatment outcome (17, 18).

According to Alghamdi et al. (2012), vitiligo is misunderstood and has a bad reputation among the general public [19]. Another study examined British vitiligo sufferers and discovered that they had a propensity toward avoidance and prejudgment based on unfavorable views and a lack of information about the illness among the general public. [20]. Myths surrounding the cause of the condition were likely to contribute to these cultural values. The public's perspective of vitiligo varies in terms of disease severity, risk of infection, availability of treatment, and duration of therapy [19]. A study conducted in Egypt aimed to compare vitiligo knowledge and attitudes among patients, relatives, and non-relatives. The findings revealed that patients and their families have statistically significantly more vitiligo knowledge than non-relatives (88% and 88% vs. 68%, respectively). Seventy-one percent of relatives have a positive attitude toward vitiligo patients, compared 58% of non-relatives. Medical personnel were the most common basis of information for vitiligo patients (47% vs. 39% and 6% in relatives and non-relatives, respectively).

Though, for non-relatives, friends and family are the primary sources of data (49% vs. 23% and 29% in patients and relatives) [21]. In contrast, a study conducted in Saudi Arabia by Fatani et al. (2016) found that the majority of participants (86.5%) agreed that there is a lack of public knowledge about vitiligo

and its treatment. and found that individuals who knew enough about vitiligo had more favorable opinions regarding the illness [22]. Additionally, societal acceptability of vitiligo sufferers is heavily influenced by public conceptions of the condition. Although prior research have probed the opinions of vitiligo patients about their condition, few studies have tackled this problem from the public's perspective. As a result, the present study will investigate the Saudi public's knowledge, perceptions, misunderstandings, and attitudes concerning vitiligo.

Undoubtedly, there is a need for public effective educational interventions to deliver information about vitiligo disorder to professionals and non-professionals since it can decrease the stigma and correct the lingering myths [23]. The current study aims to examine the impact of an educational intervention program on improving the knowledge and attitude of the professionals and non-professionals working at the colleges of nursing in Jeddah, Saudi Arabia, and Shebin El Kom, Egypt towards vitiligo patients. Furthermore, studying the knowledge and attitudes of the public toward vitiligo is important since the knowledge about vitiligo was found to be insufficient in both countries due to the fewer studies that have been conducted in some regions in Saudi Arabia and Egypt. In addition, it will be crucial and significantly quality of life of the patient. Therefore, the researchers investigated the effect of an educational intervention on improving the Perception (knowledge and attitudes) of Egyptian and Saudi professionals and nonprofessionals toward patients having vitiligo.

Dermatology studies pay special attention to the higher prevalence of patients with vitiligo, who may be affected by depression and stress because of the public’s lack of knowledge and negative attitudes toward them. When compared to Western communities, Arabian communities have many misconceptions about vitiligo. False societal myths are ingrained in cultural identity and used to excuse social conduct. They have a significant impact on people's lives and ways of living, including decisions about receiving medical care while unwell. There are several factors that contribute to common vitiligo myths and misunderstandings. They include ignorance about diseases, illiteracy, cultural preconceptions, and societal prejudices. These misconceptions may influence people to behave poorly toward the illness.

Therefore, it is essential to understand the myths and misunderstandings surrounding vitiligo to enhance the care and health education of patients as well as healthy people. Furthermore, there have been few studies on this topic in Egypt and Saudi Arabia, so a study of the public’s perspectives (using a representative sample of professionals and non-professionals in Egypt and Saudi Arabia) could reveal the general status of public perceptions and knowledge of vitiligo, enabling for future restitution of these misunderstandings [21, 24, 25].

Aim of the study

The main aim of this study is to investigate the effect of an educational intervention on improving the perceptions (knowledge and attitudes) of Egyptian and Saudi professionals and non-professionals toward patients having vitiligo. More specifically, the study aimed to:

- Assess professional and nonprofessionals' (Egyptian and Saudi) knowledge and attitudes pre-post-educational intervention.
- Determine the difference in perceptions of people with vitiligo in their families and others before and after the intervention.
- Investigate the association between professional and non-professional knowledge and attitudes toward vitiligo patients.
- Examine the association between participants' demographic background with their perception (knowledge and attitudes) toward patients having vitiligo.

Hypotheses

The study tested the following hypotheses:

- H1: Professionals' and nonprofessionals' total mean scores will be increased after the educational intervention.
- H2: The knowledge and attitudes of people having vitiligo patients will be better than those who don't and will be improved post educational intervention.
- H3: There will be a significant correlation between participants' knowledge and attitudes toward vitiligo patients in the pre-and post-educational interventions.

Materials and Methods

Research Design

A quasi-experimental, two-group (Saudi-Egyptian), the pre-posttest design was selected to accomplish the study objectives. This design type was used to address the research questions, which looked at investigating the impact of educational interventions on the development of Participants' knowledge and attitudes toward vitiligo patients. Accordingly, the researchers introduced the intervention to measure its impact on the dependent variables at least twice (pre-and post-test measurements) (White and Sabarwal, 2014).

Study Area/Setting and target population

The intervention was conducted at the Nursing College -Jeddah (CON-J), Saudi Arabia, and the faculty of nursing, Menoufia University, Egypt. The target population included all professionals in addition to employees working in both settings in the academic year, Spring 2020–2021.

Sample technique and size

A convenience sampling method was used to include all people (professionals including faculties and teaching assistants and non-professionals including employees and administrative) working in both colleges of nursing during the period from November 2021 until January 2022.

Research tools

The tools included 4 main parts:

Part A: Demographic and personal characteristics questionnaire: it includes information about participants age, level of education, marital status, family history, any experience with vitiligo, sources of data in case they experienced vitiligo or if they presently have any patients having vitiligo.
Part B: The IOF Scale: The generic instrument is a 24item scale. The scale was shortened to a 15-item that is divided into two subscales: the familial/social subscale (9 items) and the personal strain subscale(6 items) which focus on the impact of disease on the patient himself. Due to limitations in the current study to access vitiligo patients, only 9 points related to familial burden were used.
This scale is developed to assess the chronic illness effects on families and parent of children with chronic diseases. The response is rated on a 4point Likert scale ranging from "strongly agree-1", "agree-2", "disagree-3", and "strongly disagree-4". The responses of this scale are reversed as the items are negatively worded which mean high impact is corresponding to a high score. The shortened scale (15 item) has been shown to be also valid by further research [14].
Part C: Knowledge scale: This questionnaire is adapted from a study conducted by Juntongjina, Rachawonga, and Nuallaongb (2018) on their study. The possible responses to the items of knowledge questionnaire are: "Yes," "No," and "Not Sure" with zero score for wrong answers and one score for right answer. The total scores extended from zero to 15 with a higher score indicates a higher knowledge level. Score at or exceeding the median value reflects having "sufficient knowledge" however score under the median level reflects having "insufficient knowledge".
Part D: attitudes scale: This scale consists of 8 statements and is adapted from the study done by Juntongjina, Rachawonga, and Nuallaongb (2018).It is a five – point Likert scale, starting from (0) reflecting " very strong agree" response and (5) reflecting " strongly disagree". The total score of the scale ranged from (0- 40) with high score indicates . Based on the participants' responses they are classified either to having a " positive attitude" (if their scores are at or higher than the median value) or having a " negative attitude" (if their scores are under the median level).

Validity and reliability of the tools

The content validity, as well as the internal reliability of the tools, were ascertained in previous studies by a group composed of Thai nationals as well as by Juntongjina, Rachawonga, and Nuallaongb (2018). The results proved the tools were valid and reliable as Cronbach's alpha was higher than 0.70 for RPQ.
In this study, back translation was used to verify the questionnaires as the tools were translated into the Arabic language. Then a panel of experts in the study field tested the translated version for face validity. Also, Cronbach's alpha correlation coefficient was used to ascertain the internal reliability of the translated tools, for the knowledge scale was 0.83 while the attitudes scale reported 0.811, which indicates the high reliability of the used tools. In addition, a pilot study was done on 5% of participants to evaluate the feasibility and clarity of the tools, recognize obstacles that may be provoked while collecting data, and

assess the required time to finish the study tools. The reliability of the tools through Alpha Cronbach reliability analysis indicated that the reliability of the knowledge scale was 0.83 while the attitudes scale reported 0.811, which indicates the high reliability of the used tools.

Data collection

The collection of data was done in 3 stages as follows :

1st stage: preparation

During this stage, researchers focused on searching the literature, books, and research to formulate the knowledge and skills required for the awareness intervention which intended to:

- Improve participants' information about vitiligo.
- Assist participants in identifying causes, manifestations, and treatment options.
- Empower the participants with the necessary knowledge to improve their attitudes toward vitiligo patients.
- Assesses the participants to identify whether the educational intervention has a significant contribution to improving their knowledge and attitudes toward vitiligo patients.

The researchers developed materials that were revised by expert members and disseminated to all participants to improve their knowledge. The learning sessions' time and place were agreed upon by the participants depending on their available time or the sessions to be conducted via the Microsoft team since the pandemic of COVID-19 continues.

2nd stage: Implementation

Once the approval for the study was obtained from both King Abdullah International Medical Research Center (KAIMRC) with the IRB approval number (NRJ21J/067/03) and the faculty of nursing, Menoufia university's ethical committee, data collection was started after the required arrangements were done in both nursing colleges, in Jeddah and Egypt.

- At the beginning of the intervention, the informed consent forms were signed by all participants and then they were informed to complete the questionnaires after seeing a brief 20-second video ratified by three expert dermatologists.
- That video shows a waiter with noticeable white patches on both hands serving a customer at a restaurant. In the final scene of the video, the waitress' hands were paused for 30 seconds. To visually insert the picture of his hands into the participants' minds as their last impression, the image of his hands was clearly displayed and embedded. The video was both wordless and soundless and identified the state or complaint of the waitress.

- The educational intervention consisted of 3 sessions, which were conducted online via the Microsoft team and Zoom platform 3 times a week for 2 hours for each group based on their available time schedule.
- All 3 sessions covered the theoretical part of vitiligo, including definition, etiology, manifestations, treatment modalities, and psychosocial impact of vitiligo through using case scenarios and clinical situations from dermatological clinical aspects.

Methods of instructions

In addition to booklets, brochures, and audio-visual materials, participants received softcopies of the sessions A variety of interactive lectures, brainstorming exercises, case scenarios, and discussions were used to teach participants what they needed to know about vitiligo and how to relate to those living with the condition.

3rd stage post-program evaluation

Afterward, a debriefing session was conducted to ask participants about their feedback, what they liked or disliked about the program and their questions and suggestions related to the learning sessions. By the end, post-survey questionnaires link had been distributed to the participants for completion and return to the researcher.

Ethical considerations

The study was submitted to the research unit at the College of Nursing in Jeddah, as well as the KAIMRC and IRB official approval number (NRJ21J/067/03)) and approval (No. 907) from Faculty of Nursing Menoufia University ,Egypt . Following that, study subjects in both settings were contacted to explain the study's goals and procedures. They were informed that their participation in the study was entirely voluntary and that they could withdraw at any time without penalty. The participants were assured that their responses would be kept anonymous throughout the study and that their data would be kept confidential.

Data management and analysis plan

The collected data were organized and tabulated using the Microsoft Excel Program and statistical analysis was done using SPSS version 25. Descriptive data were presented in the form of frequencies and percentages, quantitative parametric data were presented as mean and standard deviation (SD). Differences among the groups during the pre and post-visit were measured by a paired t-test. Also, a correlation coefficient test was used to identify the correlation between the study variables. The level of significance of the results was set as highly significant (HS) as P-value ≤ 0.01 and significant (S) as P-value ≤ 0.05, while not significant (NS) if P-value > 0.05.

Results

The participants' demographic characteristics are described in Table 1. The analyzed sample age (n = 375) spanned from 20 to 50 years, and a high percentage of Egyptians (81.4%) and Saudis (81.1%) had a university or higher education level. Many Egyptians (88.4%) were married; 82.6% lived in rural areas; 75.6% were non-health professionals, and 64% came from middle-income families. While nearly two-thirds of Saudis (66.5%) were single, the majority (94.6%) lived in cities, 82.2% were health professionals, and nearly two-thirds (69.7%) had a middle-class socioeconomic status.

Table 2 shows that 33.7% and 37.8%, respectively, of Egyptians and Saudis at the time of the baseline data had no previous information about vitiligo. Nearly half of the sources of information were television for Egyptians (46.5%) and Saudis (52.2%), according to the study. The percentages of Egyptians and Saudis who had a first-degree relative working in the healthcare area were 58.6% and 58.2%, respectively. Additionally, the majority of the Egyptians and Saudis had no known family members who had vitiligo. Furthermore, there is approximately an agreement among Saudi and Egyptian participants that patients with vitiligo should have special treatment; not have more children; no time for other family members; family gives up things; fatigue is a problem; they live from day to day, and nobody understands the burden. They have the burden of traveling to the hospital and living on a roller coaster.

Table 3 shows that, regarding knowledge level, a highly significant variance was found among Egyptian participants before and after the intervention. Also, there was a highly significant variance among Saudi participants pre- and post-intervention ($p < 0.01$). While no significant variance between the Egyptian and Saudi groups pre- and post-intervention ($p = 0.109$, $p = 0.121$), Furthermore, regarding attitude, a highly significant difference was found among Egyptians pre and post-intervention. Also, a highly significant difference was found among the Saudi group from pre-post-intervention ($p < 0.01$). While there was no statistically significant variation between the Egyptian and Saudi samples before and after intervention ($p = 0.133$, $p = 0.125$),

Table 4 displays that, concerning knowledge, there was a statistically significant variance between Egyptian group health professionals and non-health professionals post-intervention ($p = 0.021$). Moreover, a statistically significant variance was found between Saudi group health professionals and non-health professionals after the intervention ($p = .001$). Furthermore, by the end of the intervention, no significant difference was found between Egyptian and Saudi health professionals ($p = .092$). Furthermore, by the end of the intervention, no statistically significant difference was found between Egyptian and Saudi non-health professionals ($p = .087$). By the end of the intervention ($p = .005$), a highly significant difference in attitude was found between Egyptian health professionals and non-health professionals. After completing the intervention, a highly significant difference ($p = .009$) was found between Saudi health professionals and non-health professionals. Furthermore, a non-significant difference was found between Egyptian and Saudi health professionals at post intervention ($p = 1.650$).

While the difference between Egyptians and Saudi non-health professionals after intervention was insignificant (p =.090).

Table 5 shows that the relationship between total attitude and total knowledge of the Egyptian group was good, with a highly significant statistical correlation during pre and post-intervention (r = 0. 505, at p = 0. 000, r = 0. 601, at p = 0. 000). Similarly, in the Saudi group, there was a good relationship between total attitude and total knowledge with a highly statistical correlation during pre and post-intervention (r = 0. 510 at p = 0. 000 and r = 0. 613 at p = 0. 000).

Table 6 demonstrates a positive relationship between total attitude and total knowledge in the group of Egyptian, with a highly significant statistical difference between Egyptian health and non-health professionals during pre- and post-intervention (r = 0. 486, r = 0. 552, r = 0. 525, and r = 0. 632, respectively, at p 0.01). Furthermore, a positive relationship between total attitude and total knowledge was found in the Saudi group, with a highly significant difference between Saudi health and non-health professionals before and after intervention (r = 0. 492, at p = 0. 000, r = 0. 575 at p = 0. 000, r = 0. 531 at p = 0. 000, and r = 0. 628 at p = 0. 000).

Table 7 demonstrates that a positive relationship was found among total knowledge, total attitude, sociodemographic characteristics, and disease experience in the Egyptian group, with a statistically significant correlation between before and after the intervention (at p 0.01). Similarly, in the Saudi group, a positive relationship was found between total attitude, total knowledge, sociodemographic characteristics, and disease experience, with a significant statistical correlation during pre- and post-intervention at (p 0.01).

Figure 1: Comparison between Egyptian & Saudi in their knowledge on (pre/ post)

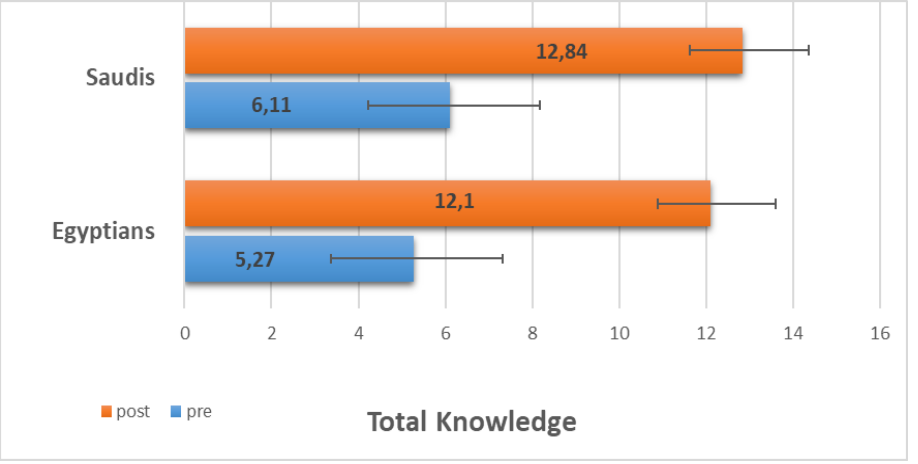


Figure 1 shows that knowledge increased after post interventions in both the Egyptian and Saudi study groups (12.84% and 12.1%, respectively).

Figure 2: Comparison between Egyptians & Saudis in their attitudes on (pre/ post)

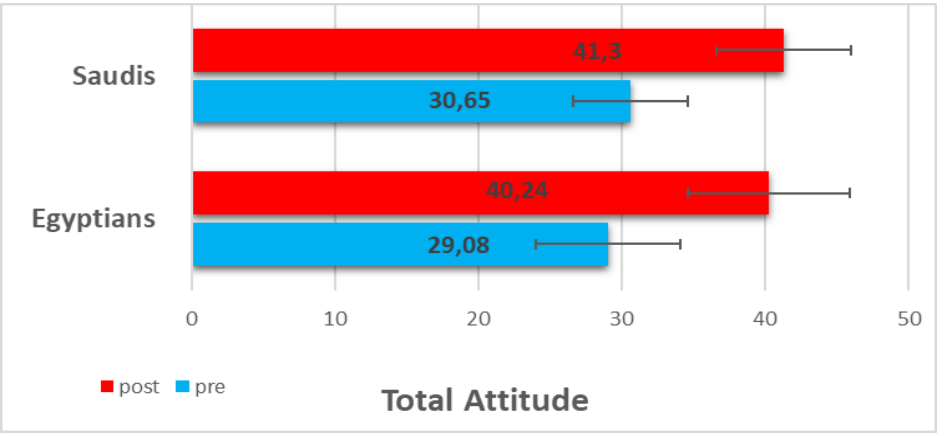
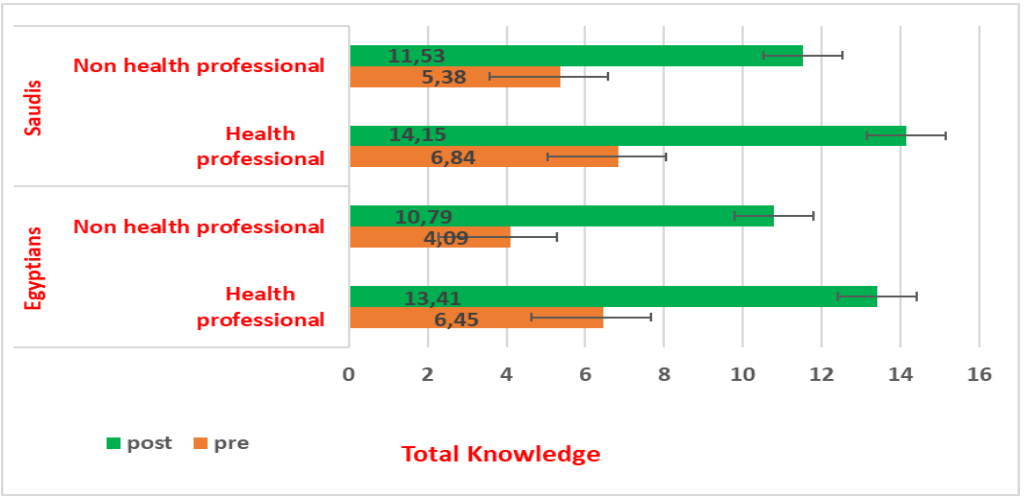


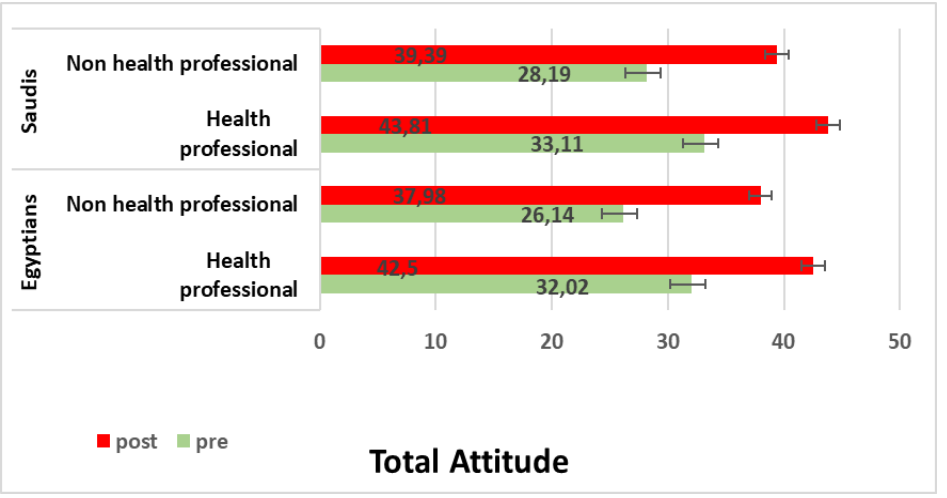
Figure 2 depicts a comparison of Egyptian and Saudi attitudes toward pre and post-intervention interventions. Both Egyptian and Saudi study subjects' attitudes improved after post interventions (30.65% and 29.08%).

Figure 3: Comparison between professionals and nonprofessionals, both Egyptian & Saudi in their knowledge on (pre/ post)



This figure compares the knowledge of Egyptians and Saudis based on their professional and nonprofessional status. The total knowledge of Egyptian and Saudi study subjects improved post-program interventions (Egyptian professional and non-professional 13.41, 10.79, .65%, in contrast with 14.15 and 11.53 among Saudi professionals and non-professionals, respectively.

Figure 4: Comparison between professionals and nonprofessionals both Egyptian & Saudi in their attitudes on (pre/ post)



Egyptians and Saudis are compared based on their professional and nonprofessional status in this figure. Egyptian and Saudi study subjects' attitudes improved post-program interventions (42.5, 37.98, while 43.81, 39.39, respectively, among Egyptian and Saudi professionals and non-professionals).

Discussion

Several misconceptions about vitiligo exist across cultures and societies. It is the first and only study of its kind because it sheds light on regional problems in two different communities—Egyptian and Saudi—and demonstrates how awareness campaigns affect perceptions of vitiligo. The current study assessed 357 people. Of these, 172 (48.18%) were Egyptian and 185 (51.82%) were Saudi. The majority of them were aged 20 to 30 years old, with a mean of 33.36± 10.2 for Egyptians and 31.18± 8.94 for Saudis, and a university or higher was the most common educational level. Many Saudis work in health care and reside in cities. While the majority of Egyptian participants were non-health professionals living in rural areas, this conclusion is consistent with the findings of other investigations. AL-Ghamdi et al. observed in Al Baha Province, Southern Saudi Arabia, that the majority of their participants had high educational levels, worked in health care, and lived in cities with moderate socioeconomic status [28]. In accordance, a survey in Thailand by Juntongjin, Rachawong, and Nuallaong found that the majority of their participants had a university or higher education level in healthcare and non-healthcare workers with moderate socioeconomic status [27].

In this study, at baseline data, although most of our participants were educated, most Saudi Arabian participants worked in the health field. Approximately one-fourth of Egyptians and Saudis had no previous information regarding vitiligo. This demonstrates the shortage of medical knowledge imparted to those working in the health field and may cause the community to be unaware of addressing health problems. This conclusion is compatible with several studies. In Qassim

locality, Saudi Arabia, Robaee et al. revealed that 31.9% of subjects had no information about vitiligo [25]. In accordance, a study by Alshammrie et al., at Hail University, Saudi Arabia, reported that 23% of undergraduate and graduate students, workers and non-medical staff. working had a lack of information about the disease [29]. Similarly, research on Rachawong in Southeast Asia revealed a broad lack of understanding regarding vitiligo. This highlights how crucial it is for the general population to understand and embrace vitiligo from all cultural backgrounds, as this is one of the key factors contributing to the sadness, guilt, embarrassment, and isolation that vitiligo patients experience [27].

In the present study, television served as the primary information source for Egyptians, whereas Saudis relied primarily on their studies. This finding resembles that of a study conducted by Alshammrie et al. at Hail University in Saudi Arabia on the insights, attitudes, and understanding of the general community regarding vitiligo [29]. Similarly, Robaee et al. discovered that newspapers and doctors served as the primary sources of information about their subjects [25]. This might be attributed to the fact that the current study, the majority of Saudi participants worked in the health field. Additionally, most of them had a university or higher educational level. This emphasizes the significance of social media and the need for health practitioners to be careful about disseminating accurate information to the public. Professional and non-professional attitudes toward vitiligo are critical, especially if they work in the medical field. The results of an interesting Belgium study found that only 36% of treated dermatologists encouraged their patients to undergo treatment because they had pessimistic expectations about the outcome [30]

Moreover, according to the recent report, more than half of the Egyptians and Saudis have relatives working in the health field. Moreover, many of the Egyptians and Saudis had no relatives who had vitiligo. In addition, there is approximately an agreement among Saudi and Egyptian participants regarding misconceptions and negative attitudes toward vitiligo patients. This finding is consistent with several studies. In Egypt, Mahfouz et al. (2020), concluded that Misconceptions and unfavorable views concerning vitiligo are widespread, particularly among non-relatives. Saudi Arabia, Turkey, and Thailand have regulations that are similar. In one Saudi research and one Indian study, however, proper knowledge was observed among relatives and non-relatives [31]. This might be explained by the fact that many Saudi and Egyptian participants in the current study had non-relatives. This underscores the fact that contact with patients and health care providers increases relatives' knowledge and attitude toward patients.

In a study conducted in Qassium, Saudi Arabia, Robaee et al. (2008) found that having relatives with vitiligo may influence someone’s decision to marry someone with vitiligo. The reason for this is that being exposed to vitiligo patients gives you a greater understanding of the disease, which leads to less hesitation in accepting vitiligo patients socially [25]. This finding is backed up by the current study, which found that families with vitiligo patients had more knowledge and better attitudes toward accepting people with vitiligo. Similarly, Topol and colleague (2016), when asked about the impact of vitiligo on self-image, 80% of patients said it had no effect on their relationships with family or friends, according to a

Turkish study. In addition, 91% of affected vitiligo patients indicated that their disease did not affect their work or school performance [32].

The results of the present study revealed that there were no statistically significant differences in the overall knowledge and attitude of the two groups before and after the intervention, with Saudis scoring higher on the mean for knowledge and attitudes (6.11, 30.65, 12.84, and 41.30, respectively) than Egyptians (5.27, 29.08, 12.10, and 40.24). This finding is consistent with a number of previous studies by Tsadik et al., Fatani et al., and Juntongjin et al. that looked at attitudes toward people with vitiligo. They discovered that those who knew enough about vitiligo compared to those who knew less had less negative attitudes and more positive attitudes. This could be explained by the fact that many of the Saudi participants in the current study were professionals with advanced degrees. Consequently, their education served as the foundation for their expertise [33-35]. This finding conflicts with that of AL-Ghamdi et al. in Al Baha Province, Southern Saudi Arabia, who found that such misunderstandings and attitudes were prominent despite the majority of their participants having a high degree of education [28].

Considering the connection found between knowledge, attitude scores, and factors such as age, education, occupation, income, and experience of disease, the present study discovered that the public's understanding and attitude toward vitiligo, whether Saudi or Egyptian, professional or non-professional, pre- and post-intervention had a good relationship with a significant difference between pre and post-intervention. This finding is consistent with Alghamdi et al.'s revelation that misunderstandings related to the cause of vitiligo were more frequent in younger people and those with lower levels of education [28]. However, Rachawong (2018) found that there was no association between the public's knowledge, attitude, and sociodemographic factors [27].

The current study discovered that the general public's understanding about vitiligo was related to their attitude toward vitiligo. Those who learned enough about vitiligo, on the other hand, had more favorable opinions regarding the illness. This is consistent with prior Saudi Arabian study by Tsadik et al. and Fatani et al. [33,34]. Likewise, Mahfouz et al. in Egypt [31]. In accordance with Juntongjin et al., In Thailand. As a result, it is thought that increasing public awareness about the disease is a critical step in changing the public's attitude toward the disease [35]. In an Egyptian study, Ihab et al. concluded that stress is the most common exacerbating factor for vitiligo [36]. This result is supported by AL-Ghamdi et al. findings, in which 44.4 percent of the population believed that stress and anxiety exaggerated the disease [28]. According to a study conducted by Rachawong, Vitiligo can operate as a barrier, preventing patients from interacting and interfering with relationships such as marriage [27]. This conclusion, which is consistent with the findings of Parsad et al., Sampongna et al., and Matto et al., explains the widespread challenges that vitiligo patient's face when wanting to form relationships [37-39]. Additionally, Alghamdi et al. observed that public attitudes regarding vitiligo are critical since public opinions are likely one of the most major reasons for vitiligo patients' sadness, isolation, and misery. [28].

Conclusion and Recommendations

The results of the current study concluded that the educational program was helpful and effective in enhancing knowledge and attitudes toward vitiligo patients among Saudi and Egyptian professionals and non-professionals. Therefore, irrespective of the population's ethnicity, it is critical to run health awareness programs to educate the public and correct any misconceptions about vitiligo that the general public may have. As a result, the lives of those who are affected are improved.

Limitation of the study

This study has two limitations: due to the limited sample size and the lack of variable gender in the sociodemographic characteristics during data collection. Additionally, the sophistication of healthcare services provided to the population differed between the two countries.

Nursing implications

Future research is needed to:

- Look for cultural associations with vitiligo and adaptation to this chronic skin disorder.
- Addressing vitiligo patients' issues in various countries including their perception, information and satisfaction with the provided services and care.
- Search for the impact of the public's awareness on the quality of life of vitiligo patients, and addressing factors associated with awareness and attitudes towards vitiligo.

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Conflict of interest

The authors declared that they have no conflict of interest**.**

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Table 1: Socio-demographic characteristics of the studied groups (N= 357)

Items	Egyptians group (n=172)		Saudis group (n=185)	
	No.	%	No.	%
Age (Year)				
20-<30	71	41.3	95	51.4
30-<40	45	26.2	35	18.9
40-<50	30	17.4	30	16.2
≥50	26	15.1	25	13.5
$\bar{x}$ S.D	33.36 ± 10.2		31.18±8.94	
Educational level				
Elementary or lower	2	1.2	3	1.6
High school	30	17.4	32	17.3
University or higher	140	81.4	150	81.1
Marital Status				
Married	152	88.4	51	27.6
Single	11	6.4	123	66.5
Divorced	6	3.5	9	4.8
Widowed	3	1.7	2	1.1
Separated	0	0.0	0	0.0
Residence				
Urban	30	17.4	175	94.6
Rural	142	82.6	10	5.4

Occupation				
Health professional	42	24.4	152	82.2
Non health professional	130	75.6	33	17.8
Socioeconomic state				
Higher	33	19.2	37	20
Moderate	110	64	129	69.7
Low	29	16.8	19	10.3
Have any previous information related to vitiligo	114	66.3	115	62.2
Yes	58	33.7	70	37.8
No				
If yes, what are the source of information?	30	26.3	25	21.7
Television	53	46.5	60	52.2
Study	15	13.2	16	13.9
Relatives	12	10.5	10	8.7
Internet	4	3.5	4	3.5
Other				
Have a family member working in health setting?	87	50.6	103	55.7
Yes	85	49.4	82	44.3
No				
If yes, who is working?	51	58.6	60	58.3
First degree relative	36	41.4	43	41.7
Second degree relative				
Family history of vitiligo				
Yes	16	9.3	20	10.8
No	156	90.7	165	89.2
If yes, who is the member?				
First degree relative	12	75	14	70
Second degree relative	4	25	6	30
If yes, what is level of agreement with each statement	2.47 ± 0.81		2.50 ± 0.72	
Treat patient 'special'?	2.92 ± 0.74		2.99 ± 0.69	
Not to have more children	2.92 ± 0.64		2.97 ± 0.67	
No time for other family members	2.75 ± 0.72		2.82 ± 0.79	
Family gives up things	2.75 ± 0.86		2.80 ± 0.80	
Fatigue is a problem	2.35 ± 0.80		2.40 ± 0.74	
Live from day to day	2.64 ± 0.71		2.70 ± 0.66	
Nobody understands the burden	2.75 ± 0.81		2.71 ± 0.73	
Traveling to the hospital is a burden	2.51 ± 0.81		2.47 ± 0.78	
Live on a roller coaster				

Table 2: Information related to experience with vitiligo of the studied groups

Items	Egyptian group		Saudis group	
	No	%	No	%
Have any previous information related to vitiligo?	114	66.3	115	62.2
Yes	58	33.7	70	37.8
No				
If yes, what are the source of information?	53	46.5	25	21.7
Television	30	26.3	60	52.2
Study	15	13.2	16	13.9
Relatives	12	10.5	10	8.7
Internet	4	3.5	4	3.5
Other				
Have a family member working in health setting?				
Yes	87	50.6	103	55.7
No	85	49.4	82	44.3
If yes, who is working?				
First degree relative	51	58.6	60	58.3
Second degree relative	36	41.4	43	41.7
Family history of vitiligo				
Yes	16	9.3	20	10.8
No	156	90.7	165	89.2
If yes, who is the member?				
First degree relative	12	75	14	70
Second degree relative	4	25	6	30
If yes, what is level of agreement with each statement				
Treat patient 'special'?	2.47 ± 0.81		2.50 ± 0.72	
Not to have more children	2.92 ± 0.74		2.99 ± 0.69	
No time for other family members	2.92 ± 0.64		2.97 ± 0.67	
Family gives up things	2.75 ± 0.72		2.82 ± 0.79	
Fatigue is a problem	2.75 ± 0.86		2.80 ± 0.80	
Live from day to day	2.35 ± 0.80		2.40 ± 0.74	
Nobody understands the burden	2.64 ± 0.71		2.70 ± 0.66	
Traveling to the hospital is a burden	2.75 ± 0.81		2.71 ± 0.73	
Live on a roller coaster	2.51 ± 0.81		2.47 ± 0.78	

Table 3: Comparison between Egyptians &Saudis in their knowledge and attitudes on (pre/ post)

Variables	No. of items	Egyptians group		Saudis group		p_1	p_2
		Pre	Post	Pre	Post		
Knowledge	15	5.27 ± 2.06	12.10 ± 1.51	6.11 ± 1.89	12.84 ± 1.22	t= 1.528 p= 0.109	t= 1.300 p= 0.121
		t= 16.90 p= .000**		t= 18.63 p= .000**			
Attitude	8	29.08 ± 5.64	40.24 ± 4.70	30.65 ± 5.04	41.30 ± 4.01	t= 1.201 p= 0.133	t= 1.471 p= 0.125
		t= 21.01 p= .000**		t= 22.00 p= .000**			

t= t. test. **highly significant at p ‹ 0.01.
P_1: p value for comparing two groups at pre-intervention
P_2: p value for comparing two groups at post-intervention

Table 4: Comparison between professionals and nonprofessionals both Egyptian & Saudi in their knowledge and attitudes on (pre/ post)

Variables	No. of items	Egyptians group				p_1	Saudis group				p_2	p_3	p_4
		Health professional		Non-health professional			Health professional		Non-health professional				
		Pre	Post	Pre	Post		Pre	Post	Pre	Post			
nowledge	15	6.45 ± 1.25	13.41 ± 0.75	4.09 ± 1.81	10.79 ± 1.77	t=9.571 p= 0.021*	6.84 ± 1.02	14.15 ± 0.42	5.38 ± 1.75	11.53 ± 1.41	t=10.02 p=.018*	t=3.854 p=.092	t=4.2 p=.0
		t= 14.82 p= .000**		t= 13.95 p= .000**			t= 15.20 p= .000**		t= 14.71 p= .000**				
ttitude	8	2.02±4.25	42.50±4.10	26.14±5.86	37.98±5.06	t=13.95 p= .005**	33.11±4.74	43.81±3.65	28.19±5.25	39.39±4.36	t=10.92 p=.009**	t=0.998 p=1.650	t=3.0 p=.09
		t= 17.01 p= .000**		t= 16.23 p= .000**			t= 17.92 p= .000**		t= 17.31 p= .000**				

t= t. test. p = p-value No statistically significant at p > 0.05. *: Statistically significant at p < 0.05. **: Highly statistically significant at p ≤ 0.01.
P_1: p value for comparing between (Egyptian health and non-health professionals) at post intervention.
P_2 p value for comparing between (Saudi health and non-health professional) at post intervention.
p_3: p value for comparing between (Egyptian and Saudi health professional) at post intervention.
p_4: p value for comparing between (Egyptian and Saudi Non health professional) at post intervention.

Table 5: Correlation between Egyptian & Saudi in their knowledge and attitudes on (pre/ post)

Variables		Egyptians group		Saudis group	
		Total attitude		Total attitude	
		Pre	Post	Pre	Post
Total knowledge	r	.505	.601	.510	.613
	p	.000**	.000**	.000**	.000**

r= correlation coefficient test **highly significant at p ‹ 0.01.

Table 6: Correlation between professional and nonprofessionals both Egyptian & Saudi in their knowledge and attitudes on (pre/ post)

Variables		Egyptians group				Saudis group			
		Health professional		Non health professional		Health professional		Non health professional	
		Total attitude		Total attitude		Total attitude		Total attitude	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Total knowledge	r	.486	.552	.525	.632	.492	.575	.531	.628
	p	.000**	.000**	.000**	.000**	.000**	.000**	.000**	.000**

r= correlation coefficient test **highly significant at p ‹ 0.01.

Table 7: Correlation between knowledge and attitudes of Egyptian & Saudi and their socio-demographic characteristics on (pre/ post)

Variables		Egyptians group				Saudis group			
		Total knowledge		Total attitude		Total knowledge		Total attitude	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Age	r	.314	.526	.322	.531	.329	.535	.327	.538
	p	.019*	.000**	.017*	.000**	.021*	.000**	.015*	.000**
Educational level	r	.352	.582	.360	.591	.348	.575	.355	.387
	p	.011*	.000**	.010*	.000**	.013*	.000**	.010*	.000**
Occupation	r	.469	.615	.475	.622	.479	.619	.483	.636
	p	.007**	.000**	.006**	.000**	.005**	.000**	.005**	.000**
Socioeconomic state	r	.301	.513	.310	.519	.313	.519	.315	.535
	p	.025*	.000**	.021*	.000**	.022*	.000**	.019*	.000**
Have any previous information related to vitiligo	r	.437	.606	.441	.614	.431	.602	.435	.630
	p	.009**	.000**	.007**	.000**	.009**	.000**	.008**	.000**
Have a family member	r	.375	.600	.381	.611	.366	.597	.374	.620
	p	.010*	.000*	.010*	.000*	.010*	.000*	.011*	.000*

working in health setting?			*		*		*		*
Family history of vitiligo	r p	.462 .007**	.610 .000**	.470 .005**	.617 .000**	.467 .007**	.614 .000**	.476 .003**	.625 .000**

r= correlation coefficient test **highly significant at p ‹ 0.01.