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ORIGINAL ARTICLE

Using the Theory of Planned Behaviour to assess nursing and allied health students' knowledge and intention to care for patients with COVID-19

Turkiya S. Al Maskari PhD, RN, Associate Dean, Lecturer[1] | **Saada Al Barwani PhD, RN, Lecturer**[2] | **Salwa S. Al Alawi PhD, RN, Lecturer**[3] | **Hamed Khamis Al Reesi PhD, Head, Directorate**[4] | **Amal S. Alshidi PhD, RN, Lecturer**[5] | **Mohammed A. Al Maskari PhD, RN, Associate Dean, Lecturer**[6]

[1]Oman College of Health Sciences, South Sharqiya, Sur, Oman

[2]Maternal Child Health Department, Oman College of Health Sciences, Muscat, Oman

[3]Adult Health Department, Oman College of Health Sciences, South Sharqiya, Sur, Oman

[4]Department of Studies and Research, Planning and Studies, Ministry of Health, Suhar, Oman

[5]Adult Health Department, Oman College of Health Sciences, North Batinah, Sur, Oman

[6]Associate Dean, Nursing Program, Oman College of Health Sciences, North Sharqiya, Ibra, Oman

Correspondence
Turkiya S Al Maskari, Department of Child Health, Oman College of Health Sciences, South Sharqiya, Sur, Oman.
Saada Al Barwani, Department of Maternal Child Health Nursing, Oman College of Health Sciences, Muscat, Oman.
Emails: Turkiya.almaskari@gmail.com (TSAM) ; s.barwani@gmail.com (SAB)

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Abstract

Aims and Objectives: To assess nursing and allied health students' demographics, knowledge and intentions to care for patients with an infectious disease, COVID-19.

Background: COVID-19 has caused a public health crisis and worldwide panic. Little is known about students' knowledge levels and intentions to care for infected patients during pandemics.

Design: A quantitative, cross-sectional study.

Method: A cross-sectional study with a convenience sample ($N = 480$) of nursing and allied health students was analysed using the Mann–Whitney and Spearman's correlation tests.

Results: At least 60% of the participants attained high scores for 16 of the 22 items on the knowledge scale. Knowledge was positively associated with attitude ($r_s = .19$, $p < .01$) and perceived behavioural control ($r_s = .38$, $p < .01$) and negatively associated with subjective norms ($r_s = -.11$, $p < .05$). Senior students had higher scores ($p = .024$) in knowledge. Intention was negatively correlated with knowledge ($r_s = -.24$, $p < .01$) and perceived behavioural control ($r_s = -.16$, $p < .01$). Male students ($p = .031$) and younger students had higher scores in intention ($p = .040$). Males had higher scores in subjective norms ($p < .001$), and older and senior students had higher scores in perceived behavioural control ($p < .001$).

Conclusions: Despite the current knowledge on COVID-19 available through multimedia-communication channels, students had negative perceived behavioural controls and intentions to care for COVID-19 patients. Formal education and training are required to enhance students' intentions to care for patients with infectious diseases. Additionally, demographics and belief variables influence students' intentions to care, and further in-depth analysis is required.

Relevance to Clinical Practice

This study suggests the importance of updating and contextualizing nursing and allied health curricula to meet global infectious disease guidelines and, ultimately, to support the healthcare system with efficient practitioners in future pandemics.

KEYWORDS
COVID-19, knowledge, nursing and allied health students, Oman, theory of planned behaviour

1 | INTRODUCTION

The World Health Organization (WHO) designated the worldwide COVID-19 outbreak a pandemic -(WHO, INT, 2020) The first case of the virus outbreak was reported in December 2019, in Wuhan, China, before the disease spread to become a global disaster (Huynh et al., 2020). By June 17, 2021, 176,693,988 confirmed cases of COVID-19, including 3,830,304 deaths, had been reported worldwide (WHO Coronavirus Dashboard, 2021).

Frontline healthcare workers are at increased risk of susceptibility to COVID-19 (Nguyen et al., 2020) due to a potential shortage of personal protective equipment (PPE), prolonged exposure to infected patients, inadequate training on infection prevention and control, and exposure to undiagnosed cases (Wang et al., 2020). Nursing and allied healthcare students have been confronted with similar challenges that have led to an examination of their academic progress. These challenges included the cessation of clinical and laboratory learning courses to reduce the students' risk of exposure to COVID-19 (Dewart et al., 2020). Addressing these challenges may facilitate the students' roles in supporting the extreme shortage of healthcare professionals by assuming non-COVID-19-related tasks and consequently allowing healthcare professionals to focus on COVID-19-related tasks. However, to our knowledge, no previous studies have analysed students' knowledge, attitudes, subjective norms, perceived behavioural controls or behavioural intentions towards caring for patients with a pandemic disease in Oman. In addition, little is known about students' knowledge levels and attitudes towards the measures required to manage the outbreak of any pandemic disease (i.e. COVID-19). Understanding the underpinnings of caring for such cases will aid in the development of behavioural change interventions that contribute to the potential for providing readily available healthcare providers during pandemic crises.

What does this paper contribute to the wider global clinical community?

- Globally, COVID-19 has greatly affected the learning and training of nursing and allied health students.
- Updating and contextualizing nursing and allied health curricula are essential to properly prepare students for the unexpected emergencies of future pandemics.
- Healthcare policies are required to guide students' practice in clinical settings for the students to be able to assist in future pandemics.
- Understanding students' intentions to care for patients with infectious diseases through theory of planned behaviour (TPB) belief variables (attitudes, subject norms, and perceived behavioural controls) may help inform healthcare administrators and researchers about future generations of healthcare workers' preparedness for pandemics.

2 | BACKGROUND

The Oman government implemented various steps in keeping with internationally adopted practices for combating COVID-19. These steps included banning residents from leaving their governorates or states, mandating social distancing, requiring the use of PPE in public places, instituting national lockdowns and quarantine procedures, closing schools and public establishments, and restricting social affairs (Al Shekaili et al., 2020). Despite these government efforts, the virus transmission in Oman has increased. As of 3 July 2021, the confirmed cases of COVID-19 in Oman reached 270,504, with 3140 cumulative deaths, in the country's population of 5,230,581 (Tarassud Ministry of Health, 2021; Worldmeter, 2021). In a recent study, researchers indicated that community transmission was the most common mode of acquiring the infection among healthcare workers who tested positive for COVID-19 at a tertiary hospital in Oman (Al Maskari et al., 2020).

The ongoing crisis has challenged the health care and the education system causing unique issues in their role of preparing competent next-generation providers. At the beginning of the pandemic, these institutions removed students from their clinical placements to avoid putting them and their families at risk (Dewart et al., 2020). Schools also rapidly moved students to distance learning despite the lack of infrastructure and resources. Because of these changes, the competencies required for graduation were placed in jeopardy, and the healthcare system became constrained by the reduced number of new graduates. The next generation of healthcare providers is critically important and ultimately will play a major role in responding to and managing this pandemic.

This study was conducted in a well-known higher education academic institution in Oman. The college offers various health education programmes at the bachelor's level such as Nursing, Pharmacy, Medical Laboratory Sciences, Medical Imaging, Physiotherapy and Health Information Management. Annually, the college supplies the largest number of graduates to the Omani Ministry of Health (MOH). In 2018, 530 nursing and allied health professionals graduated from the college (MOH, 2018). Because this is the main institution educating qualified health professionals in the country, understanding students' knowledge of COVID-19, attitudes, subjective norms, perceived behavioural controls and behavioural intentions to care for patients with infectious diseases (i.e. COVID-19) is crucial. We

believe this study will meaningfully inform healthcare programmes and the future healthcare workforce about the competencies required to support the health care system in the case of shortages caused by pandemics.

To use, we selected the theory of planned behaviour (TPB) as a guiding framework (Ajzen, 1991, 2011). The TPB was selected to better understand what variables may influence students' intentions to care for patients with COVID-19, considering the nature of the collective Omani society (subjective norms) and students' knowledge levels, attitudes and perceived behavioural controls. The TPB is based on the premise that behaviour is strongly linked to beliefs. The TPB postulates that an individual's intention to perform a behaviour is predicted by that individual's belief variables. These belief variables include attitudes, subjective norms and perceived behavioural controls (Ajzen, 1991, 2011). The theory assumes that a human being's engagement in a certain behaviour is based on prior rationalization (i.e. making systematic use of the available information) and consideration of the implications of their actions. The likelihood of engaging in a certain behaviour depends on the strength of the individual's intention to perform that behaviour.

According to the TPB, three components predict the intention. First is the person's attitude, which reflects an individual's beliefs about a particular behaviour and their evaluation of those beliefs. Second is subjective norms, which reflect an individual's beliefs about their significant other's expectations regarding the performance of certain behaviours and the individual's motivation to comply. Third is the perceived behavioural control, which reflects a belief about the ease or difficulty of performing behaviours and relating past experiences, resources, opportunities and barriers to performing the behaviour (Ajzen, 1991, 2011; Figure 1).

We evaluated the students' levels of knowledge on COVID-19, students' sources of information on COVID-19, transmission, symptoms, prognoses and treatments, which might influence their intentions to care. Previous studies that used the TPB addressed the diverse impacts of knowledge (Dumitrescu et al., 2011; Eskandari et al., 2017; Senghore et al., 2018) and demographics (Bohon et al., 2016; Molla et al., 2007) on intentions. To that, we added students' knowledge and demographics to the framework to evaluate their contribution to the intention to care for patients with COVID-19.

This study aimed to investigate nursing and allied health students' knowledge of COVID-19, demographic characteristics, attitudes, subjective norms, perceived behavioural controls towards and intentions to care for patients with an infectious disease (COVID-19) in Oman.

3 | METHODS

3.1 | Study design

We selected an exploratory, cross-sectional and descriptive quantitative design for this study. This design was chosen for its feasibility in predicting the relationship between multiple study variables and the participants' demographic variables at a fixed point-in-time (Polit & Beck, 2004). STROBE checklist for observational research was used to guide this study (Appendix S1).

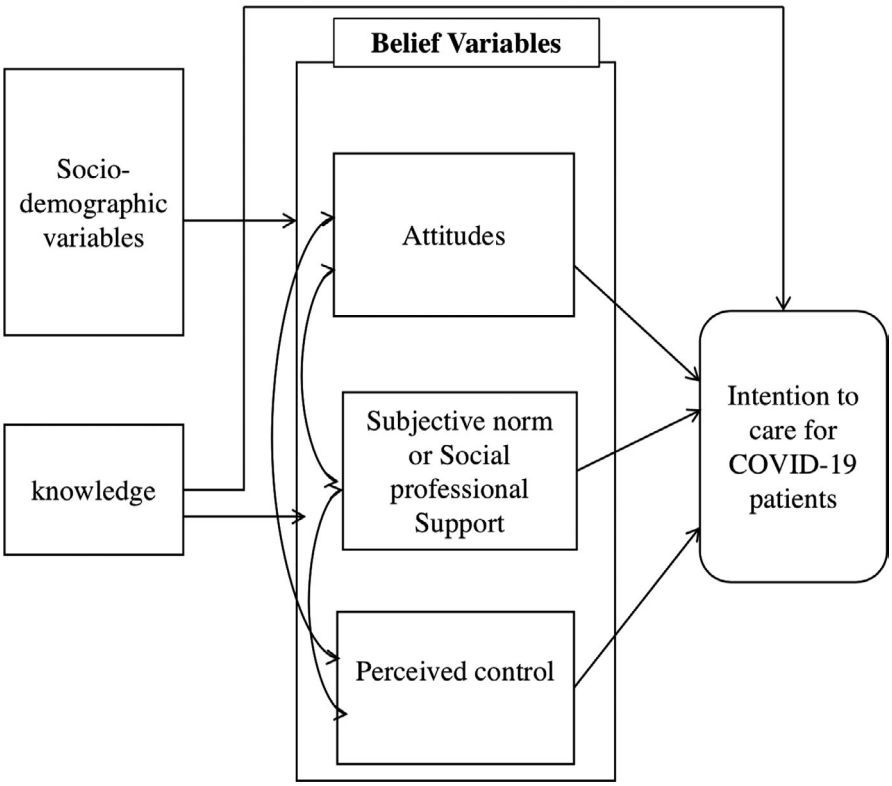

FIGURE 1 Conceptualization of the students' intention to care for COVID-19 patients based on the theory of planned health behaviour (modified from Ajzen, 1991)

3.2 | Participants

All nursing and allied health students at the college were invited to participate in this study, except students in the foundation programme due to their lack of exposure to patient care. We calculated the sample size through G*Power software, based on the assumption of a medium effect size of 0.30 as the test power analysis, 5% as the precision estimate (marginal error bound), 95% as the confidence limit and 0.05 as the significance level. Based on these determinants, the minimum sample size required to conduct the research was 111 students.

3.3 | Study measurements

The three components were operationalized as follows: (a) Attitude was the degree to which students had positive or negative evaluations of their intentions to provide direct care for patients with COVID-19, (b) Subjective norms were the students' beliefs about whether people important in their lives would approve or disapprove of their intentions to care for patients with COVID-19, and (c) Perceived behavioural controls were the students' perceptions that caring for patients with COVID-19 was within their control. We also considered the nature of the collective Omani society (as subjective norms) and its expected influence on the students' decisions. Additionally, we included students' demographic characteristics, knowledge and previous clinical experiences as additional contributions to their intentions to care for COVID-19 patients.

We developed a self-administrated web-based questionnaire in five stages. In Stage 1, we reviewed relevant literature. In Stage 2, we focused on developing questionnaire items that suited the study purposes and kept the TPB belief variables (attitudes, subjective norms and perceived behavioural controls) in mind. In Stage 3, 16 experts in education reviewed the questionnaire items for content and construct validity testing. We retained items with a content validity index (CVI) greater than or equal to 0.7 and either modified or removed those with a content validity index less than 0.7. We also considered the experts' revisions and suggestions for modifying questionnaire items in Stage 4. Stage 5 required piloting the questionnaire to 30 nursing and allied health students from various college programmes for internal consistency reliability testing; we then modified the questionnaire accordingly.

The final draft of the questionnaire consisted of three sections: the demographic section (9 items), the knowledge section (22 items) and the TPB section, which consisted of four subsections: attitude (7 items), subjective norms (11 items), perceived behavioural control (8 items) and intention (4 items). The questionnaire utilized a 5-point Likert scale ranging from 1 = *strongly agree* to 5 = *strongly disagree*. Details of the knowledge questionnaire's development were discussed in a recent publication (Al Barwani et al., 2021). Each section of the questionnaire was scored by calculating the mean scores the individuals obtained for each scale. Overall, the newly developed tools had internal consistency, with a Cronbach's alpha that ranged from 0.63 to 0.76. The item descriptions and alphas are presented in Table 1.

3.4 | Data collection

We developed and distributed a web-based online survey via college email accounts and *WhatsApp* messages. This convenient self-selection sampling approach allowed respondents to volunteer to participate in the study or to opt out. Therefore, the questionnaire sampled only those who received the online link and were willing to participate. The study window was July 1–31, 2020. We provided the participants with an opportunity to review the study's description and to voluntarily agree to participate by clicking the confirm button on the online questionnaire form. To prevent duplicate responses, we accepted only one questionnaire per person by tracking participants' internet protocol addresses. For the purpose of maintaining confidentiality, we neither requested names nor identifying details from the participants. We obtained Institutional Review Board approval from the Research, Ethical Review, and Approval Committee of the College for this study (approval reference: *REC/PROPOSAL_APPROVED/10/2020*).

3.5 | Data analysis

We analysed data using IBM SPSS Statistics (Version 20.0). Descriptive statistics were used in the univariate analysis of participants' general demographic characteristics (frequencies and percentages) and the study scales (mean, standard deviation, median, interquartile range, skewness, and kurtosis). The internal consistency of the study scales was checked using Cronbach's alpha. Bivariate analysis was performed using nonparametric tests because the assumption of normality was violated. The Mann–Whitney test was used to assess the significant differences in the levels of study scales by participants' characteristics. Additionally, Spearman's correlation coefficients were calculated to assess the significant correlations between the study scales. The STROBE checklist for observational research studies was used to guide this paper's development.

3.6 | Participants' characteristics

The questionnaire was completed by 507 students, with a response rate of 59%. Due to missing or incorrectly entered values, 27 observations were excluded, and three more were excluded because they were from the foundation year. The total observations included in the analysis was 480. The majority of the respondents were female (n = 369, 76.9%) and were from the nursing programme (n = 437, 91%). Among the participants, 82.1% (n = 394) reported having no previous experience with volunteer work. However, those who had volunteered before stated their experience was limited to increasing community awareness of health-related issues, participating in

TABLE 1 Descriptive statistics of the study scales ($n = 480$)

	Number of items	Cronbach's Alpha	Descriptive		Distribution	
			Mean (SD)	Median (IQR)	Skewness	Kurtosis
Knowledge	22	0.744	3.93 (0.34)	3.95 (0.41)	−0.545	1.077
Attitude	7	0.63	3.30 (0.34)	3.29 (0.43)	0.481	1.526
Subjective norms	11	0.76	2.82 (0.41)	2.82 (0.43)	−0.442	1.946
Perceived behaviour control	8	0.747	3.60 (0.56)	3.63 (0.75)	−0.604	0.959
Intention	4	0.761	2.55 (0.50)	2.50 (0.75)	0.465	0.067

cleaning their city or beach, and/or caring for diabetic patients in villages (Table 2).

3.7 | Students' knowledge about COVID-19

At least 60% of the students or higher received high scores (agree and strongly agree) for 16 of the 22 items on the knowledge scale. The students recognized the mode of transmission ($n = 446$, 93%), droplets as the source of the infection's spread, ($n = 449$, 93.5%), and at-risk groups ($n = 442$, 92%). However, half of the students ($n = 241$, 50%) considered antibiotics the first line of treatment for COVID-19, and 248 (52%) viewed children and young adults as having a lower risk of getting sick from this disease. Interestingly, 26 (5%) of the participants were uncertain of or did not know the common symptoms of COVID-19 (fever, dry cough, possible loss of smell and taste, and fatigue), and 276 (57.5%) were either not sure or could not identify the scientific name of the virus that causes this disease (COVID-19).

The students also expressed a high level of awareness of self-protection measures, such as the importance of wearing face masks and gloves, maintaining social distance ($n = 457$, 95%), frequent handwashing with soap ($n = 446$, 93%), and/or rubbing hands with sanitizer for at least 20 s ($n = 451$, 94%). The students also identified the recommended isolation period for people exposed to COVID-19 ($n = 437$, 91%). Nevertheless, the percentage declined when it came to cultural aspects. For example, 424 (88%) of the participants agreed with avoiding crowded places, and 430 (89.6%) agreed with avoiding handshaking and maintaining physical distance with family members. Nevertheless, 302 (63%) said that they would celebrate social events, such as Ramadan and Eid Al-Fitr, with immediate family members. We also noted that 139 (29%) considered ordering food from restaurants a safe practice.

The students were aware of various sources for information on COVID-19. Their primary sources were the country's official websites ($n = 388$, 81%), followed by the official Oman COVID Twitter account, '@OmanVSCovid19' ($n = 371$, 77%). The participants reported awareness about the COVID-19 call and Tarassud, the government's mobile application for COVID-19 updates ($n = 392$, 82%, and $n = 343$, 71.5%, respectively). Conversely, 150 (31%) of the participants were uncertain whether their college social media accounts offered sufficient information about COVID-19 prevention, and 123 (26%) claimed it did not. Additionally, only 188 (39%) of the students had attended a free online workshop or course about COVID-19 that either their college or another college in Oman had organized.

TABLE 2 Distribution for the demographic characteristics of the participants

Demographic characteristics	*n* (480)	%
Gender		
Male	111	23.1
Female	369	76.9
Age in years		
18–21	274	59.6
22–25	186	40.4
Profession		
Nursing	437	91.0
Allied health	43	9.0
Current academic year		
Junior (First and Second)	254	54.0
Senior (Third and Fourth)	216	46.0
Have you ever volunteered before?		
Yes	86	17.9
No	394	82.1

3.8 | Students' intentions to care for COVID-19 patients

Overall, 340 (71%) students expressed positive intentions if they were called to volunteer to provide care for COVID-19 patients. However, the majority said they would volunteer only primarily if they were provided with PPE ($n = 381$, 79%) and if they were offered a training programme on the competencies needed to care for COVID-19 patients ($n = 336$, 70%). Incentives such as recommendation letters were less important to students ($n = 305$, 63.5%).

3.9 | Associations between demographics, the TPB belief variables, knowledge, and intentions

Table 3 presents the differences in the levels of the study variables (TPB belief variables, knowledge, and intentions) according to

TABLE 3 Differences in the levels of the study scales by demographic characteristics of the participants (Mean, $n = 480$)

		Knowledge	Attitude	Subjective norms	Perceived control	Intention
Gender	Male	3.88	3.29	2.98	3.64	2.64
	Female	3.95	3.31	2.77	3.59	2.53
	p-value*	.086	.767	<.001	.544	.031
Age in years	18–21	3.91	3.30	2.81	3.51	2.60
	22–25	3.99	3.31	2.84	3.73	2.48
	p-value*	.057	.711	.980	<.001	.040
Profession	Nursing	3.93	3.30	2.81	3.61	2.55
	Allied health	3.98	3.34	2.91	3.51	2.53
	p-value*	.431	.347	.267	.333	.680
Academic Year	Junior	3.90	3.29	2.79	3.49	2.61
	Senior	3.98	3.31	2.85	3.71	2.50
	p-value*	.024	.490	.391	<.001	.056
Have you ever volunteered before?	Yes	3.98	3.43	2.97	3.87	2.60
	No	3.93	3.28	2.79	3.54	2.54
	p-value*	.138	<.001	.002	<.001	.256

*Mann-Whitney Test (2 groups).

TABLE 4 Correlation matrix between the study scales ($n = 480$)

	Knowledge	Attitude	Subjective Norms	Perceived Behaviour control	Intention
Knowledge	1				
Attitude	0.19**	1			
Subjective Norms	−0.11*	0.13**	1		
Perceived Behaviour Control	0.38**	0.24**	0.24**	1	
Intention	−0.24**	−0.04	0.09	−0.16**	1

Spearman's correlation coefficients.
*$p < .05$, **$p < .01$.

the demographic variables. Male students had significantly higher mean scores for subjective norms ($p < .001$). Older students aged 22–25 years, had significantly higher mean scores for perceived behavioural control ($p < .001$). Senior students' mean scores were significantly higher in perceived behavioural control ($p < .001$). Compared to students with no volunteer experience, students with previous volunteer experience had significantly higher scores for attitudes ($p < .001$), subjective norms ($p = .002$), and perceived behavioural control ($p < .001$). No significant differences were found between knowledge and demographic variables, except for the academic year, with senior students (third and the fourth year) having higher mean scores ($p = .024$) than junior students (first and second years). Moreover, intention was significantly associated with gender and age, wherein male ($p = .031$) and younger students ($p = .040$) had higher scores.

Table 4 shows the correlations between the TPB, knowledge, and intentions. Attitude positively correlated with subjective norms ($r_s = .13$, $p < .01$) and perceived behavioural control ($r_s = .24$, $p < .01$). Subjective norms had a significant positive correlation with perceived behavioural control ($r_s = .24$, $p < .01$). Knowledge had a significant positive correlation with attitude ($r_s = .19$, $p < .01$) and perceived behavioural control ($r_s = .38$, $p < .01$). Conversely, knowledge had a significant negative correlation with subjective norms ($r_s = -.11$, $p < .05$). Additionally, intention negatively correlated with knowledge ($r_s = -.24$, $p < .01$) and perceived behavioural control ($r_s = -.16$, $p < .01$).

4 | DISCUSSION

The rapid spread of COVID-19 and the severity of its associated illness has impacted the safety of healthcare providers and nursing and allied health students, thus influencing their intentions to care for such patients (Minuye et al., 2021). Nevertheless, COVID-19 education was reported to have increased providers' self-efficacy in dealing with infectious diseases, and previous work experience with infectious diseases contributed to better intentions to provide care (Heo et al., 2021; Minuye et al., 2021).

4.1 | Students' knowledge and TPB belief variables

We identified knowledge as an important construct that influenced the students' beliefs regarding their intentions to care for patients with COVID-19. The students' knowledge about COVID-19 varied, presenting global uncertainty about the disease in some areas and a high level of awareness in others. For example, the students' general knowledge about the mode of transmission, sources, risk groups, and self-protection measures was high, which was consistent with other research findings (Modi et al., 2020; Saqlain et al., 2020). Conversely, their knowledge about the common symptoms of COVID-19, treatment measures, and the scientific name of COVID-19 was lower. This was expected because the disease is new and the scientific understanding of the virus continues to evolve due to rapid medical discoveries.

The majority of the study participants monitored COVID-19 news and guidelines on the country's official websites and social media, particularly the official Omani government COVID-19 Twitter account, '@OmanVSCovid19'. This finding was consistent with that of Huynh et al. (2020), who reported that healthcare workers used social media as their primary source of information regarding COVID-19. In Oman, the MOH has established channels for communicating with the public such as a COVID-19 hotline and call centre. The MOH also launched a mobile application, Tarassud, to update both healthcare workers and the public about COVID-19. These communication channels focused on reducing the spread of false information and rumours and informing the public of the latest virus updates. Despite the students' awareness of these communication channels, almost half of them were uncertain of their college's efforts via social media to raise students' awareness of COVID-19 during the crisis. Because social media platforms are popular means of communicating with young adults, educational institutions are urged to activate and maintain relevant, meaningful, and up-to-date accounts to support their students and facilitate their engagement in times of crisis.

Consistent with other studies, we found that senior students had higher knowledge levels and better perceived behavioural controls than juniors (Brailo et al., 2011; Sontakke et al., 2011). Senior students have been exposed to more theoretical and clinical courses than junior students; therefore, senior students' levels of knowledge and confidence in giving care were expected to exceed those of junior students.

In this study, even though senior students had greater knowledge of COVID-19, their intentions to care for COVID-19 patients were no different from those of junior students. A significant negative correlation was noted between knowledge and intent to care for patients with COVID-19 in this study. The overload of COVID-19 information on social media since the pandemic started may have contributed to these negative intentions. The increase in awareness about the transmission of the potentially deadly virus could ultimately contribute to students' reluctance to volunteer to care for COVID-19 patients. In previous studies on SARS and AIDS, researchers also reported negligible results or a weak association between knowledge and willingness to care (Ko et al., 2004; Tsai & Keller, 1995; Wang et al., 1993; Yeh et al., 1990). In our study, most students expressed their willingness to care for a COVID-19 patient if they are provided with PPE and equipped with the necessary competencies for this task. Heo et al. (2021) reported that education has the potential to improve nurses' intentions to care for COVID-19 patients. Thus, educational institutions should consider intensifying efforts to enhance students' knowledge of and skills in infectious disease management and the use of precautionary measures.

4.2 | Theory of planned behaviour belief variables and students' intentions to care

Subjective norms play an essential role as a construct that motivates or discourages an individual's intention towards a behaviour. In this study, subjective norms referred to the influence of family, friends, and teachers on students' intentions. Subjective norms positively correlated with attitudes and perceived behavioural controls and negatively correlated with knowledge. A culture's influence on social interactions is most visible through the concept of subjective norms. Individuals live within the context of society and other individuals. Omani culture, in general, is family-oriented. In some instances, the domestic unit may include extended family members (Koermer, 2013). As an Arabic Muslim culture, Oman has unique social norms that guide relationships between family members. Many of these values influence individuals' beliefs, attitudes, perceived behavioural controls, and intentions. In this study, the students scored low on survey items where COVID-19 restrictions were enforced on cultural norms. For example, the students scored high on knowledge of self-protection measures, for example, physical distancing and isolation; nevertheless, almost two-thirds of the students (63%) considered gathering in the month of Ramadan and for Eid Al-Fitr a safe and acceptable practice. This result is consistent with the escalating number of positive cases of COVID-19 in Oman due to community transmission among the public and frontline healthcare workers (Al Maskari et al., 2020.

Cultural norms often shape expectations for gender behaviour and roles, which differ from one society to another (Schalkwyk, 2000). In Arabic cultures, men are expected to be leaders, husbands, sons, and fathers who carry out difficult tasks and defend their nation in difficult times. This may explain the results of this study where male students scored significantly higher than female students in subjective norms and intentions to care for COVID-19 patients. The cultural expectations for the male role in Omani society may have created a sense of altruism in male students and ultimately encouraged them to do more for their communities during the pandemic. Farther exploration of the male role in Arabic cultures is needed.

In this study, older students demonstrated higher perceived behavioural controls and intentions to care for COVID-19 patients than younger students. Older students are often exposed to caring for various types of patients during their clinical practicums

and ultimately might project more confidence in providing care for COVID-19 patients. These findings were consistent with a recent study that indicated previous work experience on infectious diseases predicts an improvement in nurses' intentions to care for COVID-19 patients (Minuye et al., 2021). Additionally, we inferred from the findings that students with previous volunteer experience would have significantly higher positive attitudes, subjective norms, and perceived behavioural controls. Similarly, Rhode (1998) and Shi et al. (2018) reported that individuals with volunteer experience or those who had observed their parents' involvement in volunteer activities were more likely to help other people in need compared to those without volunteer experience.

4.3 | Study limitations

This study was conducted in one governmental public college focused on providing nursing and allied healthcare education. Therefore, the results cannot be generalized to students in other colleges in Oman. Furthermore, the study used a newly developed instrument for data collection. Despite the process of testing the instrument's validity and reliability, more studies must be conducted using the same instrument to strengthen its psychometric properties or to create translated versions. Thus, a potential risk for misunderstanding some of the instrument's elements might exist because an English version of the instrument was used to collect data in a population where English is not the primary language. Despite the aforementioned limitations, this study provides insights into nursing and allied health students' knowledge and intentions to care for patients with COVID-19.

5 | CONCLUSION

The management of COVID-19 has been a learning experience, especially for those working in academic and clinical settings. Nursing and allied health students reported high levels of knowledge about COVID-19; however, their knowledge was negatively correlated with their intentions. Perceived behavioural control had a significant positive correlation with knowledge and the TPB belief variables—attitude and subjective norms; however, it negatively correlated with intention. Our findings suggest a need for additional formal practical training for students in dealing with infectious diseases. Moreover, a review of nursing and allied health curricula is essential, and updates are required on infectious diseases management guidelines, including practical instructions.

In this study, we have identified several correlations between TPB belief variables, knowledge, and intentions. To better understand the influence of the participants' demographics, belief variables, and knowledge on intentions, we recommend further studies that estimate multiple variables in a single analysis. In addition, an examination of the mediation effect between knowledge and the belief variables with intention will allow for better quantification of the causal chain and add to the description of the process through which the outcome intention occurs.

6 | RELEVANCE TO CLINICAL PRACTICE

The COVID-19 pandemic is negatively impacting global healthcare services and has disrupted all aspects of nursing education and practice. The longevity of this pandemic and the shortage in the healthcare workforce are expected to continue for a while. Therefore, many authorities on the healthcare workforce have begun to identify a second line of healthcare providers to support existing healthcare teams (i.e. back up the current teams so they can keep going). Expanding the potential of nursing and allied health students and allied health students may aid the frontline healthcare workforce in the battle against COVID-19. However, these students need to be equipped with the necessary knowledge and skills before being given access to clinical settings. Therefore, assessing nursing and allied health students' knowledge and intentions to care for patients with infectious diseases is crucial.

This study is important because it assessed nursing and allied health students' knowledge and intentions to care for patients with infectious diseases (i.e. COVID-19) using TPB belief variables (attitudes, subjective norms, and perceived behavioural controls) and was conducted in a unique demographic and cultural context. Despite students knowing about COVID-19, the findings lead us to suggest that there is an urgent need for formal training programmes on managing communicable diseases. Subsequently, there is a need to update the current nursing and allied health curricula to coordinate with global emergency preparedness for any future pandemic. Allowing senior students to volunteer should also be promoted with consistent supervision and mentoring, necessary protective measures, and expansion of their scope of practice.

Similar to other countries, the COVID-19 pandemic has impacted Omani nursing and allied health students, who are dependent on clinical rotations to practice learned skills. Therefore, understanding the influence of the different variables of the TPB on students' intentions to care for patients with COVID-19 is crucial. There is a need to develop healthcare policies to guide students' practice in clinical settings in future pandemics. Students, specifically seniors, need to be well prepared for the challenges of assuming the roles of frontline healthcare workers. This would be a significant step for nursing and allied health students in different specialties to enhance their intentions to care for patients with infectious diseases.

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CONFLICT OF INTERESTS

The authors declare no potential conflicts of interest concerning the authorship, research, and publication of this article.

AUTHOR CONTRIBUTIONS

Conceived of the presented idea: TSAM, SAB, SSAA, ASA and MAAM. Conceptualized and adapted the study framework: TSAM and SAB. Verification of the analysis methods: SAB and HKAR. Data collection: TSAM, SSAA, ASA and MAAM. TSAM wrote the introduction. TSAM encouraged and maintained timeline. SAB supervised the findings of this work. HKAR conducted the analysis. HKAR and SAB wrote the results section. TSAM, SSAA and MAAM involved in writing the discussion and conclusion. All authors contributed to the discussion of the results and the final edits to the manuscript.

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions.

ORCID

Turkiya S. Al Maskari https://orcid.org/0000-0003-4770-2192
Saada Al Barwani https://orcid.org/0000-0003-3011-2559
Hamed Khamis Al Reesi https://orcid.org/0000-0002-3993-253X
Mohammed A. Al Maskari https://orcid.org/0000-0002-7070-1537

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