

June 2024

## Caring Behavior and Compassion Competence and their Association with Readiness for Interprofessional Education Among Student Nurses

Ejercito Mangawa Balay-odao

*Department of Medicine, School of Medicine, Nazarbayev University, Astana, Kazakhstan, ejercito.balayodao@nu.edu.kz*

Jennifer Mesde

*Department of Nursing Administration and Education, College of Nursing, Shaqra University, Al Dawadmi, Saudi Arabia*

Junel Bryan Bajet

*College of Nursing, Shaqra University, Al Dawadmi, Saudi Arabia*

Nahed Alquwez

*Department of Nursing Administration and Education, College of Nursing, Shaqra University, Al Dawadmi, Saudi Arabia*

Cherryl Danglipen

*School of Nursing, Allied health, and Biological Sciences, Saint Louis University, Baguio City, Philippines*

*See next page for additional authors*

Follow this and additional works at: <https://hpe.researchcommons.org/journal>

---

### Recommended Citation

Balay-odao, Ejercito Mangawa; Mesde, Jennifer; Bajet, Junel Bryan; Alquwez, Nahed; Danglipen, Cherryl; Vicente-Pascua, Jinalyn; and Cruz, Jonas Preposi (2024) "Caring Behavior and Compassion Competence and their Association with Readiness for Interprofessional Education Among Student Nurses," *Health Professions Education*: Vol. 10: Iss. 2, Article 3.

DOI: 10.55890/2452-3011.1069

Available at: <https://hpe.researchcommons.org/journal/vol10/iss2/3>

This Original Research Reports is brought to you for free and open access by Health Professions Education. It has been accepted for inclusion in Health Professions Education by an authorized editor of Health Professions Education.

---

## **Caring Behavior and Compassion Competence and their Association with Readiness for Interprofessional Education Among Student Nurses**

### **Authors**

Ejercito Mangawa Balay-odao, Jennifer Mesde, Junel Bryan Bajet, Nahed Alquwez, Cherryl Danglipen, Jinalyn Vicente-Pascua, and Jonas Preposi Cruz

## ORIGINAL RESEARCH REPORTS

# Caring Behavior and Compassion Competence and Their Association With Readiness for Interprofessional Education Among Student Nurses

Ejercito M. Balay-odao <sup>a,b,\*</sup>, Jennifer Mesde <sup>c</sup>, Junel B. Bajet <sup>c</sup>, Nahed Alquwez <sup>c</sup>, Cheryl Danglipen <sup>d</sup>, Jinalyn Vicente-Pascua <sup>e</sup>, Jonas P. Cruz <sup>a</sup>

<sup>a</sup> Department of Medicine, School of Medicine, Nazarbayev University, Astana, Kazakhstan

<sup>b</sup> School of Advanced Studies, Saint Louis University, Baguio City, Philippines

<sup>c</sup> College of Nursing, Shaqra University, Al Dawadmi, Saudi Arabia

<sup>d</sup> School of Nursing, Allied Health, and Biological Sciences, Saint Louis University, Baguio City, Philippines

<sup>e</sup> Department of Nursing, University of the Cordilleras, Baguio City, Philippines

## Abstract

**Purpose:** This study examines the association of readiness for interprofessional education on nursing students' caring behavior and compassion competence.

**Method:** This study is a cross-sectional descriptive study. The Interprofessional Readiness Scale, Caring Behavior Scale, and Compassion Competence Scale (Arabic version) were used to collect data. Data were analyzed using T-test, F-test, Spearman Rho, and multiple regression analysis. A total of 417 nursing students participated in the study using convenience sampling.

**Result:** The study found that student nurses have highly perceived interprofessional education, caring behavior, and compassion competence. The study result shows that interprofessional education influences student nurses' caring behavior and compassion competency. The factors that influence interprofessional education are gender and student general percentage average. The respondents' residence influences their caring behavior, while gender influences the compassion competence of student nurses.

**Discussion:** These results suggest that interprofessional education is a crucial factor in promoting positive characteristics and skills among student nurses, and further research should be conducted to determine the best methods for incorporating interprofessional education into nursing programs.

**Keywords:** Caring behaviors, Compassion competence, Interprofessional education, Student nurses

## 1. Introduction

Providing patient care is a challenging and complex task that requires a high level of knowledge and competence. To ensure the safety and effectiveness of care, student nurses must undergo proper training, including critical elements of nursing care such as caring behavior and compassion competence. These qualities are essential for nurses to deliver high-quality care and handle ethical and security issues effectively.

Interprofessional collaboration is also crucial for delivering excellent nursing care, as different healthcare professionals have different scopes of practice and roles in the patient's care. To prepare student nurses for interprofessional collaboration, interprofessional education (IPE) is necessary. IPE involves students learning together and from each other, which enhances teamwork and patient care [1]. Through IPE, students can be equipped to work in a multidisciplinary healthcare environment and provide high-quality nursing care [2,3].

Received 20 November 2023; revised 8 January 2024; accepted 10 January 2024.  
Available online 30 May 2024

\* Corresponding author at: Department of Medicine, School of Medicine, Nazarbayev University, Nur-Sultan, Kazakhstan.  
E-mail addresses: [ejercito.balayodao@nu.edu.kz](mailto:ejercito.balayodao@nu.edu.kz), [ejercito@su.edu.sa](mailto:ejercito@su.edu.sa) (E.M. Balay-odao), [jmesde@su.edu.sa](mailto:jmesde@su.edu.sa) (J. Mesde), [bryanbajet@su.edu.sa](mailto:bryanbajet@su.edu.sa) (J.B. Bajet), [Nalquwez@su.edu.sa](mailto:Nalquwez@su.edu.sa) (N. Alquwez), [ccdanglipen@slu.edu.ph](mailto:ccdanglipen@slu.edu.ph) (C. Danglipen), [Jinalynvicente1@gmail.com](mailto:Jinalynvicente1@gmail.com) (J. Vicente-Pascua), [cruzjprn@gmail.com](mailto:cruzjprn@gmail.com) (J.P. Cruz).

<https://doi.org/10.55890/2452-3011.1069>

2452-3011/© 2024 Association of Medical Education in the Eastern Mediterranean Region (AMEEMR). This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>). Sponsored by King Saud bin Abdulaziz University for Health Sciences.

Additionally, IPE helps students improve their caring behavior and compassion competence. However, there is a need for further research in this area, especially in Saudi Arabia, as no studies have been conducted in this field. Therefore, it is crucial to gather students' readiness for IPE and its association with their caring behavior and compassion competence. This survey will provide nursing educators with the information they need to identify areas that require improvement in IPE and design strategies to address these needs. Examining students' perceptions will offer a deeper understanding of the association of students' readiness for IPE with their caring behavior and compassion competence in the Saudi nursing context, including cultural implications.

### 1.1. Background

IPE is an educational approach that stresses the significance of teamwork and collaboration among various healthcare professionals, including physicians, nurses, pharmacists, and others [2,3]. IPE aims to create a patient-centered care system by improving communication and teamwork, fostering a shared understanding of each profession's responsibilities, and promoting interprofessional collaboration [1]. Through IPE, students learn how to work effectively in teams, build trust, and share knowledge and expertise for improved patient outcomes [4]. IPE helps them develop the skills needed to be part of a real-world interprofessional team and lays a foundation for future interprofessional collaborations in their careers as student experiences interprofessional in the clinical settings.

IPE plays a vital role in nursing education and significantly impacts student nurses. According to Social Identity Theory (SIT), the person's social identity is formed from their group, such as their profession, since it allows them to form their attitudes, actions, and insights [5]. When individuals form a group, they bring their own identities, which can facilitate collaboration and teamwork. This notion is noted in IPE, which allows students to learn from each other, enhance their competence in patient care, and improve their caring and compassion skills. IPE fosters collaboration among student nurses, promoting a culture of care and compassion [6]. It goes beyond specific practices and instills a sense of care and dedication, transforming fragmented training into collaborative interaction, which benefits both patients and healthcare professionals [7]. Students' roles in collaboration and communication are recognized by working as part of the healthcare team in the clinical setting. IPE

promotes appreciation and understanding of each team member's role, tasks, and responsibilities, improving student nurses' competence and caring skills [8]. Effective IPE also requires strong interpersonal skills, effective communication, an open-minded approach, and recognition of the valuable insights that each team member brings to the discussion [9].

Studies have shown that IPE can improve student nurses' competence and caring skills [10,11]. IPE fosters collaboration and mutual respect among students, improving patient outcomes [11]. It also enhances student understanding and competence in patient care [12]. Student nurses have a positive attitude towards IPE and a desire to improve their competence in practice [13], which contributes to improving their caring and compassion skills.

Examining their caring and compassion competence and association with the students' readiness for IPE is necessary. To our knowledge, no undergraduate studies in Saudi Arabia have explored the association between nursing students' readiness for IPE on their caring behavior and compassion competence. Previous research on IPE has primarily focused on professionals [12], and there are limited studies evaluating the management competence of student nurses [14]. There is also a gap in research examining the relationship between IPE and students' performance in clinical settings [15]. Thus, this study assessed the student nurses' readiness for IPE, caring behavior, and compassion competence. The study also examined the association of the student's readiness for IPE with their caring behavior and compassion competence.

## 2. Method

### 2.1. Design

This study was a cross-sectional and correlational study.

### 2.2. Setting and samples

The survey was conducted at Government University in Saudi Arabia. The university offers a robust nursing curriculum that combines theoretical and practical courses to provide high-quality nursing education and prepare nurse graduates for successful careers in the healthcare industry. The study respondents were nursing students aged 18 years or older currently enrolled in practical nursing courses, had clinical duties, and were willing to participate. Only students who met these criteria were included in the study. Those students who

were not enrolled in practical courses, were absent on the survey day, and declined to participate were excluded. A total of 469 respondents were targeted. Of these, 417 students from the second year to intern-level nursing students were surveyed using convenience sampling. Most of those who declined to participate are female students.

### 2.3. Instruments

The respondent demographic data (sex, year level, age, family structure, residence, and grade point average [GPA] of the student during their last term in the Department) was gathered to describe them. Three instruments were used in the study after permission was granted from the authors: “Readiness for Interprofessional Learning Scale” (RIPLS) [16], “Caring Behaviors Inventory” (CBI-16) [17], and the “Compassion Competence Scale Arabic version” (CCS-A) [18].

The RIPLS instrument is a 19-item instrument that measures an individual's readiness for interprofessional education (IPE). IPE is a collaborative learning approach in which healthcare professionals from different disciplines learn together to improve patient care and teamwork.” The RIPLS utilizes a 5-point Likert scale, ranging from “strongly disagree to strongly agree. It consists of four subscales: “Teamwork and Collaboration” (9 statements), “Negative Professional Identity” (3 statements - reverse scored), “Positive Professional Identity” (4 statements), and “Roles and Responsibilities” (2 statements). Examples of items in the scale include “learning with other students will help me become a more effective member of a health care team” and “patients would ultimately benefit if health care students worked together to solve patient problems.” A high mean score on each subscale indicates better preparedness for IPE. According to test-retest reliability analysis, the instrument has acceptable reliability for the “Teamwork and Collaboration,” “Positive Professional Identity,” and “Roles and Responsibilities” subscales. The tool reliability using Cronbach's Alpha was 0.88 for “teamwork and collaboration,” 0.86 for “Positive Professional Identity,” and 0.69 for “Positive Professional Identity.” [16] The Turkish version revealed an overall internal consistency of Cronbach's Alpha was 0.85 [19]. For the present sample, the Cronbach's alpha of the scale was 0.881.

The CBI-16 is a 16-item tool used to measure student nurses' level of caring behavior. The questionnaire utilizes a 6-point Likert scale, ranging from “never” (1) to “always” (6), to assess the frequency of caring behaviors. “Attentively listening to

the patient” and “Giving instructions or teaching to the patient” are the two items of CBI-16. Mean scores were calculated, with a higher mean score representing a higher level of perceived caring behavior. The tool has been found to have strong internal consistency reliability (coefficient of 0.95) [17]. The Cronbach's alpha of the scale in this study was 0.944.

The CCS-A is a tool used to measure the compassion competence of student nurses in Arabic. It contains 17 statements on a 5-point Likert scale, with responses ranging from “strongly disagree” to “strongly agree.” CCS-A has three subscales: “communication,” “sensitivity,” and “insight.” The scale items include “I can express my compassion towards patients through communication with them” and “I am aware of how to communicate with patients to encourage them.” The average mean score for each subscale is calculated, with a higher score indicating more compassion. The reliability and validity of the tool were established through Cronbach's alpha ( $\alpha = .806$ ), with subscale reliabilities as follows: “communication” ( $\alpha = .797$ ), “sensitivity” ( $\alpha = .788$ ), and “insight” ( $\alpha = .739$ ). The stability reliability was also established using the “Intraclass Correlation Coefficient” (ICC = 0.84) [18]. In the current sample, 0.936 Cronbach's alpha value was recorded.

### 2.4. Data collection

The proposed research study was submitted to the University's Institutional Review Board for ethical approval. Permission was sought from the deans of the various university campuses for data collection. Upon receiving permission, the researcher, coordinating with department heads and faculty members, administered the survey to the participants. The data collection occurred between January 5, 2022, and April 30, 2022. The survey was distributed during students' free time or before the end of class, and participants were informed of their right to withdraw if they felt uncomfortable answering. Any concerns or questions were addressed, and the primary researcher's contact information was provided. The collected data was then checked, and any unanswered questions were clarified with participants. Data that was not correctly answered was excluded from the analysis. The data was then tabulated, and statistical analysis was conducted. The results were discussed, and the final report was prepared. The collected data was securely kept on the primary investigator's computer with passcode protection.

## 2.5. Data analysis

Descriptive statistics were used to summarize the demographic data, the readiness for IPE, caring behavior, and compassion competence of the students. T-tests, f-tests, and Pearson's product-moment correlation were used to determine the relationship between the students' demographic variables and readiness for IPE. "Multiple regression analysis" was conducted to distinguish the association of the Saudi nursing students' readiness for IPE and demographic variables with their caring behavior and compassion competence. The data were analyzed by SPSS version 22.0.

## 2.6. Ethical consideration

The ethical considerations of the study were upheld by obtaining approval from the Institutional Research Board of Saudi institutions for higher education (ERC\_SU\_2021009). The investigators secured written consent from the participants after thoroughly explaining the research's purpose, objectives, and methodology. Participation was voluntary, and the researchers ensured that the rights and well-being of the participants were protected to prevent any potential coercion. Participants were allowed to ask questions and were told of their rights to discontinue at any point during the data collection process. Data confidentiality was maintained by ensuring that no identifying information was collected from the participants.

## 3. Results

### 3.1. Nursing students' readiness for interprofessional education, caring behavior, and compassion competence

The mean score of respondents in the RIPLS was 3.56 ( $SD = 8.81$ , range = 1.00–5.00), indicating a high

level of readiness for IPE. Regarding the RIPLS subscales, "teamwork and collaboration" has a mean score of 3.66 ( $SD = 0.65$ , range = 1.00–5.00). The mean score for "negative professional identity" was 3.05 ( $SD = 0.74$ , range = 1.00–5.00), while the mean score for "positive professional identity" was 3.84 ( $SD = 0.50$ , range = 1.00–5.00). The mean "roles and responsibilities" score was 3.39 ( $SD = 0.57$ , range = 1.00–5.00).

The mean score for CBI-16 was 5.38 ( $SD = 0.60$ , range = 2.00–6.00), indicating better perceived caring behavior. The mean score in the CCS was 3.78 ( $SD = 0.57$ , range = 1.00–5.47), indicating a high level of compassion competence. The "communication, sensitivity, and insights" subscales had average scores of 3.86 ( $SD = 0.57$ ), 3.75 ( $SD = 0.62$ ), and 3.66 ( $SD = 0.65$ ), respectively (see [Table 1](#)).

### 3.2. The association of nursing students' readiness for interprofessional education on their caring behavior

[Table 2](#) illustrates the variables associated with the nursing students' caring behavior based on multiple regression analysis. The regression model was statistically significant ( $F(12,404) = 6.76$ ,  $p < .001$ ), with an overall explained variance of 16.7% ( $R^2 = 0.142$ ) of the students' caring behavior. The results show that nursing students from extended families exhibit higher levels of caring behavior than those from nuclear families ( $\beta = 0.13$ ,  $p = .023$ , 95% CI = 0.02, 0.25). Additionally, the "negative professional identity" was negatively associated with the caring behavior of nursing students ( $\beta = -0.12$ ,  $p < .007$ , 95% CI = -0.21, -0.03), while the "positive professional identity" was positively associated with the caring behavior of nursing students ( $\beta = 0.52$ ,  $p < .001$ , 95% CI = 0.37, 0.68). These results imply that nursing students' readiness for IPE in terms of "negative professional identity" and "positive professional identity" was associated with better caring behaviors.

Table 1. Nursing students' readiness for interprofessional education, caring behavior, and compassion competence (n = 417).

Variable	Mean	SD	Range	
Inter-professional learning overall score	3.56	0.46	1.00	5.00
Teamwork and Collaboration	3.66	0.65	1.00	5.00
Negative Professional Identity	3.05	0.74	1.00	5.00
Positive Professional Identity	3.84	0.50	1.00	5.00
Roles and Responsibilities	3.39	0.57	1.00	5.00
Caring behavior inventory score	5.38	0.60	2.00	6.00
Compassion competence overall score	3.78	0.57	1.00	5.47
Communication	3.86	0.57	1.00	5.00
Sensitivity	3.75	0.62	1.00	6.00
Insight	3.66	0.65	1.00	6.00

Table 2. The association of nursing students' readiness for interprofessional education on their caring behavior (n = 417).

Predictor variables	$\beta$	SE-b	Beta	t	p	95% Confidence Interval	
						Lower	Upper
Gender	0.09	0.06	0.08	1.56	0.120	-0.02	0.21
Academic year level (Reference group: 2 nd year)							
3rd year	-0.01	0.07	-0.01	-0.12	0.909	-0.14	0.12
4th year	-0.07	0.09	-0.04	-0.76	0.449	-0.24	0.11
Internship year	0.09	0.16	0.03	0.53	0.595	-0.23	0.40
Age	0.02	0.02	0.05	1.05	0.297	-0.02	0.06
Family structure	0.13	0.06	0.11	2.28	0.023*	0.02	0.25
Residence	0.08	0.06	0.07	1.42	0.156	-0.03	0.19
Latest Grade Point Average	0.02	0.07	0.01	0.28	0.780	-0.12	0.15
Inter-professional learning							
Teamwork and Collaboration	-0.11	0.06	-0.12	-1.85	0.065	-0.22	0.01
Negative Professional Identity	-0.12	0.05	-0.15	-2.70	0.007**	-0.21	-0.03
Positive Professional Identity	0.52	0.08	0.43	6.64	<0.001***	0.37	0.68
Roles and Responsibilities	-0.12	0.06	-0.11	-1.87	0.062	-0.24	0.01

Note. The dependent variable was the overall mean of the Caring Behavior Inventory.  $\beta$  is the unstandardized coefficients; SE-b is the Standard error.

R [2] = 0.167, Adjusted R<sup>2</sup> = 0.142.

\*Significant at 0.05 level, \*\*Significant at 0.01 level, \*\*\*Significant at 0.001 level.

### 3.3. The association of nursing students' readiness for interprofessional education on their compassion competence

Table 3 shows the findings of the multiple regression analysis on the students' compassion competence. The regression model was significant ( $F(12, 416) = 32.41, p.$

< 0.001), explaining 48.9% ( $R^2 = 0.474$ ) of the variance in the students' compassion competence. The results showed that “teamwork and collaboration” and “positive professional identity” were significantly associated with the students' compassion competence. Specifically, a point increase in the “teamwork and collaboration” mean scores was

associated with a 0.30-point increase in the RIPLS mean score ( $p < .001, 95\% \text{ CI} = 0.21, 0.38$ ). Also, a point increase in the “positive professional identity” mean score was associated with a 0.49-point increase in the RIPLS mean score ( $p < .001, 95\% \text{ CI} = 0.38, 0.61$ ). These findings indicate that as the students' readiness for IPE in terms of “teamwork and collaboration” and “positive professional identity,” their compassion competence also increases.

## 4. Discussion

This study assessed student nurses' readiness for IPE, caring behavior, and compassion competence. The results demonstrate that student nurses who

Table 3. The association of nursing students' readiness for interprofessional education on their compassion competence (n = 417).

Predictor variables	$\beta$	SE-b	Beta	t	p	95% Confidence Interval	
						Lower	Upper
Gender	-0.06	0.04	-0.05	-1.34	0.181	-0.14	0.03
Academic year level (Reference group: 2 nd year)							
3rd year	0.10	0.05	0.08	1.97	0.050	0.00	0.19
4th year	-0.03	0.07	-0.02	-0.38	0.704	-0.15	0.10
Internship year	0.08	0.12	0.03	0.67	0.502	-0.15	0.31
Age	0.02	0.01	0.05	1.19	0.236	-0.01	0.04
Family structure	0.06	0.04	0.05	1.45	0.147	-0.02	0.15
Residence	0.00	0.04	0.00	-0.01	0.989	-0.08	0.08
Latest Grade Point Average	0.05	0.05	0.04	0.95	0.345	-0.05	0.15
Inter-professional learning							
Teamwork and Collaboration	0.30	0.04	0.34	6.91	<0.001***	0.21	0.38
Negative Professional Identity	-0.01	0.03	-0.02	-0.33	0.739	-0.08	0.06
Positive Professional Identity	0.49	0.06	0.43	8.52	<0.001***	0.38	0.61
Roles and Responsibilities	-0.05	0.05	-0.05	-0.99	0.323	-0.13	0.04

Note. The dependent variable was the overall mean of the Compassion Competence Scale.  $\beta$  is the unstandardized coefficients; SE-b is the Standard error.

R [2] = 0.489, Adjusted R<sup>2</sup> = 0.474.

\*Significant at 0.05 level, \*\*\*Significant at 0.001 level.

are prepared for IPE perceive caring behavior more positively and possess a higher level of compassion competence.

The finding shows that student nurses were ready for IPE. This finding shows that students perceived IPE as essential to fostering cooperation and participation in care provision. In addition, the readiness of student nurses toward IPE highlights the significance of this educational approach in nursing education because it improves student nurses' health outcomes, professional communication, enhancement of professional identity, and preparation for clinical practice. The unique opportunity for the student to learn from each other helps them to become familiar with their responsibilities in the clinical setting. Research has shown that their health outcomes improve when students collaborate and understand each other [11,20]. Furthermore, IPE promotes cooperation and participation in care provision, professional communication [21], participation, and collaboration with other health team members [22].

Moreover, IPE increases students' knowledge and practice, thereby contributing to developing their professional identity [23]. The sharing of experiences and perspectives in IPE allows students to learn from each other, providing a form of socialization that other forms of learning cannot replicate [24]. The quality of social and cognitive learning from IPE is invaluable in preparing students for their future roles as healthcare providers.

The study also revealed that female nursing students were generally more prepared for IPE than male students. This finding may indicate that cultural influences significantly shape a Saudi female nursing student's positive attitude towards IPE, such as the societal expectations placed on Saudi females to assume the domestic role as the nurturer of the family [25]. This cultural structure makes it easier for female nursing students to be more nurturing and emphatic than male nursing students. This societal expectation could influence the ability of female nursing students to express caring behaviors in healthcare settings.

The study findings suggest that student nurses with higher GPAs are more prepared for IPE. Students with higher GPAs have demonstrated a strong motivation to enhance their knowledge and skills and have used IPE to facilitate their learning [24]. This finding may view collaboration with peers as crucial in motivating students to gain new knowledge and skills [7]. As noted, the student with higher GPAs works together, exchange ideas and experiences, makes them deepen their understanding of complex topics. Better preparedness for IPE

demonstrated by student nurses with higher GPAs may also indicate their good interprofessional collaboration and knowledge exchange, which develop the skills and attitudes needed to succeed in their future careers.

The findings of the study indicated that student nurses perceive caring behavior to be highly important, which is consistent with studies conducted by Azizi et al. [26] in Iran, Labrague et al. [27] in the Philippines, and Nigeria, Allari et al. [28] and Alquwez et al. [29] in Saudi Arabia. This finding may be attributed to the focus of nursing education, wherein students are taught to prioritize the well-being and comfort of their patients to make a positive difference in their lives [27]. This finding could also be attributed to the fact that caring is often seen as a cornerstone of the nursing profession [30] and is emphasized in both the classroom and clinical settings. It is believed that when student nurses demonstrate caring behavior, they build trust and rapport with their patients, improving patient outcomes and satisfaction. Furthermore, the strong perception of caring behavior can be attributed to the religious teachings of the respondents, as Balayodao et al. [31] and Lovering [32] explain in their findings that Islam demands caring for others and has a strong relationship with Allah.

Additionally, Konuk and Tanyer [33] state that students' caring behavior is ingrained in their experiences, learning, and attitudes. Furthermore, research has shown that developing and recognizing student nurses' professional identity can significantly boost their caring behavior. Pullon et al. [34] found that professionals' identities can positively influence patient care, family, and caregivers. Moreover, Fernandez et al. [35] and Pullon et al. [34] also found that student nurses' caring behavior was improved when they understood their professional identity.

The study's findings also show that student nurses living in extended families have a higher caring behavior than those living in nuclear families. This finding can be attributed to the notion that Saudi Arabian students who belong to the extended family structure were often exposed to caring for their elderly family members. According to Saudi Arabian Culture – Family [25], the rural lifestyle of providing care and support to family members could explain the increased caring behavior. This idea is supported by the research of Wei et al. [36], who suggest that culture plays a crucial role in building caring relationships and strengthening caring practices. Furthermore, studies by Balayodao et al. [37] and Pudpong et al. [38] also highlight the importance of hands-on experience in fostering



caregiving behavior. This hands-on experience is believed to play a significant role in developing caregiving skills and confidence.

The mean average of the compassion competence of student nurses was high, mirroring the study by Samson-Akpan et al. [39] in South Korea, Oman, Nigeria, and Iraq. Furthermore, Teskereci et al. [40] found that the level of compassion among students with “Health Protection and Promotion” courses was high. Student nurses' high level of compassion competence could be associated with the notion that they are learning and developing the skills and knowledge necessary to provide patient care. As part of their training, they are taught the importance of empathy and caring in nursing and encouraged to develop these qualities. Additionally, many student nurses have a strong desire to help others and make a difference in the lives of their patients, which can further drive their level of compassion [41]. This result opposes the results of Hofmeyer et al. [42], who suggested that student nurses may have higher levels of compassion competence due to their experiences of negative self-judgment and stressful clinical encounters caused by an unsupportive clinical environment.

The finding shows that nursing students' compassion competence was associated with their readiness for IPE. Specifically, students more ready for “Teamwork/Collaboration” exhibited better compassion competence. Similarly, the research of Hood et al. [43] and Sumiyoshi et al. [22] demonstrate that nursing students possess an enhanced appreciation for “Teamwork/Collaboration” and “Professional Identity” than medical students. Also, Sumiyoshi et al. [22] discovered that nursing students obtained higher scores for “Teamwork and collaboration” than medical students. This result suggests that nurses must have the necessary skills to “effectively collaborate with other healthcare professionals” to foster compassionate care.

Furthermore, a positive professional identity influences the “compassion competence” of nursing students. The improvement of professional identity is a continual course of transition. Nursing education is central to students' professional identity as they learn and gain exposure to clinical settings. As such, students gain a sense of fulfillment and professional improvement and develop their compassion competence. Neishabouri et al. [44] mention that nursing students' experience develops a professional character by fulfilling professional practice, undertaking personal and professional improvement, and nurturing compassion competence. Clinical exposure proved to be a pivotal point in the professional development of nursing students. During this stage,

students could create professional communications with nurses, gain knowledge, and execute clinical skills, developing compassion competence. This notion is backed up by earlier studies, which have demonstrated that the clinical environment and interactions with nurses greatly influence the professional identity of nursing students, thus helping them to become more proficient in compassion competence [45,46]. The findings further confirm that nursing students held significantly weaker attitudes toward “Negative Professional Identity.” [43] Therefore, it is safe to conclude that clinical exposure provides a tangible platform for the professional growth of nursing students.

#### 4.1. Limitations

This research has limitations related to the sample, sampling techniques, and location of the respondents. The sample is unevenly distributed, such in the, gender, year level, where most participants were 3rd and 2nd-year nursing students, potentially impacting the study's statistical validity. The study used convenient sampling, which may limit the findings' generalizability. Additionally, the study was conducted only in government universities and did not include private nursing schools, affecting the generalizability of the outcomes. As a result, the findings only reflect nursing students' perceptions of government nursing schools. Future research on this topic should consider including private nursing schools to enhance the generalizability of the results. Additionally, the study did not examine the experience of nursing students in IPE. Therefore, further research in the form of qualitative study could be conducted to expand the understanding of nursing students' experiences with IPE implementation and practice.

## 5. Conclusion

Student nurses demonstrated readiness for IPE, a high level of caring behavior, and competence in compassion. It was determined that gender and student general average were associated with students' readiness for IPE, while the student nurses' family type was associated with their caring behavior. Additionally, gender was associated with the compassion competence of student nurses. The study also found that preparedness for IPE was positively associated with the student nurses' caring behavior and compassion competency. These results suggest that the students' readiness for IPE is a crucial factor in promoting positive, caring behaviors, skills, and compassion among student nurses,

and further research should be conducted to determine the best methods for incorporating IPE into nursing programs.

The study suggests that nursing educators and administrators develop strategies to integrate and implement IPE in the curriculum to enhance caring behavior and compassion competence among nursing students. Additionally, the background of nursing students, such as gender, academic year, and type of family, should be considered when designing the program. Furthermore, nursing programs should provide opportunities for students to participate in activities and practices related to IPE, which can help students develop confidence in sharing their knowledge and experiences and thus assist their colleagues in improving their competencies, which are crucial for their work after graduation.

### Ethical consideration

The Ethical Review Committee of the Saudi Institution for Higher Education (ERC\_SU\_2021009) ensured the ethical conduct of the study.

### Conflicts of interest

The authors have declared that no conflict of interest exists.

### References

- [1] WHO. Framework for action on interprofessional education and collaborative practice. 2010. [https://www.who.int/hrh/resources/framework\\_action/en/index.html](https://www.who.int/hrh/resources/framework_action/en/index.html).
- [2] Mayo AT, Woolley AW. Teamwork in health care: maximizing collective intelligence via inclusive collaboration and open communication. *AMA Journal of Ethics* 2016;18(9):933–40. <https://doi.org/10.1001/journalofethics.2016.18.9.stas2-1609>.
- [3] Jebara T, Depasquale C, Power A, Boyter A, Portlock J, Cunningham S. The international literature underpinning collaborative practice within practice based experiential learning for the initial education of student pharmacists: a scoping review. *Int J Pharm Pract* 2021;29(Supplement\_1):i39–40. <https://doi.org/10.1093/ijpp/riab015.048>.
- [4] Harrod M, Weston LE, Robinson C, Tremblay A, Greenstone CL, Forman J. It goes beyond good camaraderie": a qualitative study of the process of becoming an interprofessional healthcare "teamlet. *J Interprof Care* 2016; 30(3):295–300. <https://doi.org/10.3109/13561820.2015.1130028>.
- [5] Tajfel H. Interindividual behavior and intergroup behavior. In: Tajfel H, editor. *Differentiation between social groups: studies in the social psychology of intergroup relations*. London: Academic Press; 1978. p. 27–45.
- [6] Stanley K, Dixon K, Warner P, Stanley D. Twelve possible strategies for enhancing interprofessional socialisation in higher education: findings from an interpretive phenomenological study. *J Interprof Care* 2016;30(4):475–82. <https://doi.org/10.3109/13561820.2016.1159186>.
- [7] Flood B, Smythe L, Hocking C, Jones M. Interprofessional practice: the path toward openness. *J Interprof Care* 2021; 36(5):635–42. <https://doi.org/10.1080/13561820.2021.1981264>.
- [8] Wilson AJ, Palmer L, Levett-Jones T, Gilligan C, Outram S. Interprofessional collaborative practice for medication safety: nursing, pharmacy, and medical graduates' experiences and perspectives. *J Interprof Care* 2016;30(5):649–54. <https://doi.org/10.1080/13561820.2016.1191450>.
- [9] Elzubeir M, Rizk DEE, Al-Khalil RK. Are senior UAE medical and nursing students ready for interprofessional learning? Validating the RIPL scale in a Middle Eastern context. *J Interprof Care* 2006;20(6):619–32. <https://doi.org/10.1080/13561820600895952>.
- [10] Visser CLF, Ket JC, Croiset G, Kusurkar RA. Perceptions of residents, medical and nursing students about Interprofessional education: a systematic review of the quantitative and qualitative literature. *BMC Med Educ* 2017;17(1). <https://doi.org/10.1186/s12909-017-0909-0>.
- [11] Homeyer S, Hoffmann W, Hingst P, Oppermann RF, Dreier-Wolffgramm A. Effects of interprofessional education for medical and nursing students: enablers, barriers and expectations for optimizing future interprofessional collaboration – a qualitative study. *BMC Nurs* 2018;17(1). <https://doi.org/10.1186/s12912-018-0279-x>.
- [12] Kangas S, Rintala T, Hannula P, Jämsen E, Kannisto R, Paavilainen E, et al. The impact of interprofessional education on students' current and desired competence in diabetes care. *Nursing Open* 2022;10(1):264–77. <https://doi.org/10.1002/nop2.1301>.
- [13] Thompson S, Metcalfe K, Bonney K, Merriman C, Flynn L, Alg G, et al. Interprofessional education in geriatric medicine: towards best practice. A controlled before–after study of medical and nursing students. *BMJ Open* 2020;10(1):e018041. <https://doi.org/10.1136/bmjopen-2017-018041>.
- [14] Racić M, Joksimović B, Cicmil S, Kusmuk S, Ivković N, Hadživuković N, et al. The effects of interprofessional diabetes education on the knowledge of medical, dentistry and nursing students. *Acta Medica Academica* 2018;46(2):145. <https://doi.org/10.5644/ama2006-124.199>.
- [15] Cox M, Cuff P, Brandt B, Reeves S, Zierler B. Measuring the impact of interprofessional education on collaborative practice and patient outcomes. *J Interprof Care* 2016;30(1):1–3. <https://doi.org/10.3109/13561820.2015.1111052>.
- [16] McFadyen AK, Webster VS, Maclaren WM. The test-retest reliability of a revised version of the Readiness for Interprofessional Learning Scale (RIPLS). *J Interprof Care* 2006;20(6):633–9. <https://doi.org/10.1080/13561820600991181>.
- [17] Wolf Zane Robinson, Dillon Patricia M, Townsend Ann B, Glasofer Amy. Caring behaviors inventory-24 revised: CBI-16 validation and psychometric properties. *Int J Hum Caring* 2017;21. <https://doi.org/10.20467/1091-5710.21.4.185>.
- [18] Alabdulaziz H, Alquwez N, Cruz JP, Tumala R, Albougami A, Alboushi M. The Compassion Competence Scale Arabic version: a validation study among student nurses and interns in Saudi Arabia. *Int J Nurs Pract* 2021; 27(3):e12843.
- [19] Ergönül E, Başkurt F, Yılmaz ND, Başkurt Z, Asci H, Koc SO, et al. Reliability and validity of the readiness for interprofessional learning scale (RIPLS) in Turkish speaking health care students. *Acta Med Mediterr* 2018;3. [https://doi.org/10.19193/0393-6384\\_2018\\_3\\_122](https://doi.org/10.19193/0393-6384_2018_3_122).
- [20] Robson W. Eliminating avoidable harm: time for patient safety to play a bigger part in professional education and Practice. *Nurse Educ Today* 2014;34(5). <https://doi.org/10.1016/j.nedt.2012.06.002>.
- [21] Edwards S, Siassakos D. Training teams and leaders to reduce resuscitation errors and improve patient outcome. *Resuscitation* 2012;83(1):13–5. <https://doi.org/10.1016/j.resuscitation.2011.10.015>.
- [22] Sumiyoshi T, Yokono T, Kawachi I, Suzuki T. Learning outcomes of interprofessional collaboration among medical and nursing students in Japan. *Journal of Interprofessional Education & Practice* 2021;21:100377. <https://doi.org/10.1016/j.xjep.2020.100377>.

- [23] Huebner S, Tang Q(C, Moisey L, Shevchuk Y, Mansell H. Establishing a baseline of Interprofessional Education Perceptions in first year health science students. *J Interprof Care* 2020;35(3):400–8. <https://doi.org/10.1080/13561820.2020.1729706>.
- [24] van Diggele C, Roberts C, Burgess A, Mellis C, Interprofessional Education. TIPS for design and implementation. *BMC Med Educ* 2020;20(S2). <https://doi.org/10.1186/s12909-020-02286-z>.
- [25] Saudi Arabian Culture - Family. Cultural atlas. 2022. <https://culturalatlas.sbs.com.au/saudi-arabian-culture/saudi-arabian-culture-family>.
- [26] Azizi A, Mohammadkhani P, Lotfi S, Bahramkhani M. The validity and reliability of the Iranian version of the Self-Compassion Scale. *Practice in Clinical Psychology* 2013;1(3):149–55.
- [27] Labrague LJ, McEnroe-Petitte DM, Papatthanasious IV, Edet OB, Arulappan J, Tsaras K. Nursing students' perceptions of their own caring behaviors: a multicountry study. *International Journal of Nursing Knowledge* 2017;28(4):225–32. <https://doi.org/10.1111/2047-3095.12108>.
- [28] Allari RS, Atout M, Hasan AAH. The value of caring behavior and its Impact on students' self-efficacy: perceptions of undergraduate nursing students. *Nurs Forum* 2020;55(2):259–66. <https://doi.org/10.1111/nuf.12424>.
- [29] Alquwez N, Cruz JP, Al Thobaity A, Almazan J, Alabdulaziz H, Alshammari F, et al. Self-compassion influences the caring behaviour and compassion competence among Saudi nursing students: a Multi-University study. *Nursing Open* 2021;8(5):2732–42. <https://doi.org/10.1002/nop2.848>.
- [30] Cruz JP, Alquwez N, Balay-Odao E. Work engagement of nurses and the influence of spiritual climate of hospitals: a cross-sectional study. *J Nurs Manag* 2022;30(1):279–87. <https://doi.org/10.1111/jonm.13492>.
- [31] Balay-odao EM, Alquwez N, al Thobaity A, al Otaibi K, Alsakran YAA, Cruz JP. Behind male Saudi nursing students' mental health facade: a husserlian phenomenological approach. *BMC Nurs* 2021;20(1). <https://doi.org/10.1186/s12912-021-00779-w>.
- [32] Lovering S. The crescent of care: a nursing model to guide the care of Muslim patients. *Cultural competence in caring for Muslim patients. Divers Equal Health Care* 2012;9:171–8.
- [33] Konuk TG, Tanyer D. Investigation of nursing students' perception of caring behaviors. *J Caring Sci* 2019;8(4):191. <https://doi.org/10.15171/jcs.2019.027>.
- [34] Pullon SS, Wilson C, Gallagher P, Skinner M, McKinlay E, Gray L, et al. Transition to practice: can rural interprofessional education make a difference? A cohort study. *BMC Med Educ* 2016;16(1):154.
- [35] Fernandes AR, Palombella A, Salfi J, Wainman B. Dissecting through barriers: a mixed-methods study on the effect of interprofessional education in a dissection course with healthcare professional students. *Anat Sci Educ* 2015;8(4):305–16.
- [36] Wei H, Corbett RW, Ray J, Wei TL. A culture of caring: the essence of healthcare interprofessional collaboration. *J Interprof Care* 2019;34(3):324–31. <https://doi.org/10.1080/13561820.2019.1641476>.
- [37] Balay-odao EM, Alquwez N, Alsolami F, Tork HM, al Otaibi K, al Thobaity A. COVID-19 crisis: influence of eHealth literacy on mental health promotion among Saudi nursing students. *Journal of Taibah University Medical Sciences* 2021;16(6):906–13. <https://doi.org/10.1016/j.jtumed.2021.07.008>.
- [38] Pudpong N, Suphanchaimat R, Batra B, Hou J, Vu LTH, Dipika P. A final-year nursing student survey: rural attitudes, perceived competencies and intention to work across five Asian countries. *BMC Nurs* 2017;16(1). <https://doi.org/10.1186/s12912-017-0208-4>.
- [39] Samson-Akpan PE, Lee Y, Cayaban ARR, Al-Jubouri M, John ME. Compassion competence among nursing students from different cultures: a multi-country study. 2019. <https://stti.confex.com/stti/bc19/webprogram/Paper98871.html>.
- [40] Teskereci Gamze, Öncel Selma, Arslan Özer, Ülkü. Developing compassion and emotional intelligence in nursing students: a quasi-experimental study. *Wiley Online Library Psychiatr Care* 2020;56(4):797–803. <https://doi.org/10.1111/ppc.12494>.
- [41] Balay-odao EM, Cruz JP, Alsolais AM, Bajet JB, Alquwez N, Almansour AM, et al. Saudi nurse interns' experiences during the COVID-19 pandemic: a thematic approach. *Healthcare* 2023;11(2):230. <https://doi.org/10.3390/healthcare11020230>.
- [42] Hofmeyer A, Toffoli L, Vernon R, Taylor R, Fontaine D, Klopper HC, et al. Teaching the practice of compassion to nursing students within an online learning environment: a qualitative study protocol. *Contemp Issues Educ Res* 2016;9(4):201–22. <https://doi.org/10.19030/cier.v9i4.9790>.
- [43] Hood Kerry, Cant Robyn, Baulch Julie, Gilbee Alana, Leech Michelle, Anderson Amanda, et al. Prior experience of interprofessional learning enhances undergraduate nursing and healthcare students' professional identity and attitudes to teamwork. *Nurse Educ Pract* 2014;14(2):117–22. <https://doi.org/10.1016/j.nepr.2013.07.013>.
- [44] Neishabouri M, Ahmadi F, Kazemnejad A. Iranian nursing students' perspectives on transition to professional identity: a qualitative study. *Int Nurs Rev* 2016;64(3):428–36. <https://doi.org/10.1111/inr.12334>.
- [45] Hardy EC, Koharchik LS, Dixon H. The professional nurse–student nurse academic partnership. *Teach Learn Nurs* 2015;10(2):71–5.
- [46] Ranjbar H, Joolae S, Vedadhir A, Abbaszadeh A, Bernstein C. Becoming a nurse as a moral journey: a constructivist grounded theory. *Nurs Ethics* 2016;24(5):583–97. <https://doi.org/10.1177/0969733015620940>.