

## Relationship between Professional Identity Formation and Nursing Students' Readiness for Inter-professional Learning and Collaboration in Health Care

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### Abstract:

The establishment of a professional nursing identity among nursing students is a necessary foundation for the cultivation of proficient nursing skills and abilities. **Aim:** To assess the relationship between professional identity formation and nursing students' readiness for inter-professional learning and collaboration in healthcare. **Design:** A descriptive correlational research design. **Setting:** The study conducted at Faculty of nursing, Modern University for Technology and Information MTI. **Sample:** A convenient sample from nursing students in their third-year, fourth-year students and internship students (n=181). **Tools:** Readiness for inter-professional learning scale (RIPLS), professional identity scale for nursing students (PISNS), and Chiba inter-professional competency scale (CICS 29) which measure inter-professional collaboration. **Results:** A significant correlation between inter-professional competency (CICS) and readiness for inter-professional learning (RIPLS). A significant correlation between nursing students' professional identity (PISNS) and readiness for inter-professional learning. A highly significant correlation between nursing students' professional identity and inter-professional competency. Readiness for inter-professional learning and Inter-professional Competency dimensions predict nursing students' professional identity formation. **Conclusion:** The nursing students exhibited readiness for inter-professional learning and satisfactory inter-professional collaboration skills. There was a strong correlation between their overall inter-professional competency and readiness for inter-professional learning, as well as between their professional identity and inter-professional readiness. **Recommendations:** Integrate professional identity into nursing curriculum to boost self-esteem and recognition. Promote continuous learning among faculty for enhanced healthcare team knowledge sharing.

**Keywords:** *Inter-professional learning & Collaboration, Nursing students & Professional identity.*

### Introduction:

Fostering a professional identity among nursing students is an essential foundation for nurturing their professional nursing competence. The guidance of both clinical-practice mentors and academic faculty plays a crucial role in shaping nursing students' educational experiences, both within campus settings and during clinical practice. The evolution of nursing students' professional identity extends from the foundation of their personal identity, which takes root in childhood and evolves over a lifetime. Within the framework of nursing students' professional identity formation, key constituents comprise attributes like compassion, integrity, collaboration, and knowledge (Vabo et al, 2021).

Professional identity in nursing encapsulates a nurse's achievement within the healthcare environment. It encompasses an individual's perception of various attributes, mindsets, beliefs, social norms, values, roles, and ethical standards, resulting in the adoption of a nurse's cognitive, behavioral, and emotional aspects. This construct also pertains to the distinctive traits that characterize an individual as a member of a

specific professional community. The evolution of a professional identity constitutes a pivotal transition for nursing students as they progress through their undergraduate studies. It is defined as an individual's self-concept within the context of a particular profession. The development of this identity is a dynamic process influenced by media portrayal, educational encounters, and the examples set by role models. (Goodyear & Caryl, 2021).

The evolution of a nurse's professional identity formation is an ongoing process that begins during nursing education and persists as nurses' progress through their professional trajectory. Education, personal aspirations, and encounters play crucial roles in shaping the nursing professional identity. This maturation is an uninterrupted progression influenced by elements like assimilation into the professional sphere and practical experiences. The establishment of a nursing professional identity is closely intertwined with self-confidence and the aptitude to collaboratively engage with colleagues to enhance the workplace environment and influence patient well-being (Güner et al, 2021).

Inter-professional learning aims to instruct healthcare professionals how to learn with, from, and about one another to encourage effective collaboration for providing safe and high-quality patient care. Thus, IPE can be implemented to improve students' clinical performance so that effective communication, collaboration, and teamwork within the health care team can be achieved in the clinical setting (Yu et al, 2020).

Learning can be broadly classified into classroom-based, simulated, and practice-based contexts. Practice-based inter-professional learning (IPL) necessitates the collaboration and learning of students from two or more professions at the same placement site. The location within clinical sites offers distinct learning opportunities where students can apply theoretical knowledge to real-world situations, gain firsthand experience in inter-professional collaboration, and initiate their integration into clinical teams (O'Leary et al, 2020).

Inter-professional collaboration (IPC) is a process involving jointly advantageous active participation between independent professionals in which each member of the health care team has knowledge and skills that underwrite to the care provided and their relationships are governed by negotiated shared norms and visions (Melkamu, et al, 2020). IPC involves collective efforts towards a shared objective. Characteristics of such collaborative teamwork encompass joint responsibility, collaborative problem solving, and mutual decision-making. Effective inter-professional teams thrive when founded upon trust, respect, communication, and a shared vision, leading to enhanced collaboration. This approach has gained prominence in medical education globally, with medical schools incorporating it diversely into their curricula (Matsuzaka et al, 2020).

In the pursuit of optimal patient care and outcomes, healthcare systems have transitioned from the traditional doctor-patient relationship to a collaborative and team-oriented patient care model. Consequently, students must be adequately equipped to enter the workforce as practitioners ready for collaboration, focused on patient well-being. Various methods fall under the broader term of inter-professional learning (IPL), serving as pathways to prepare students for IPC. These pathways ensure that students are equipped with the necessary skills and mindset to engage effectively in collaborative, patient-centered practice (Matsuzaka et al, 2020).

#### **Aim of the study:**

The aim of this study is to assess the relationship between professional identity formation and nursing students' readiness for inter-professional learning and collaboration in healthcare.

#### **Research questions:**

In order to achieve the objective of this study, the following inquiries were devised:

1. What is the level of nursing students' readiness for inter-professional learning and collaboration in healthcare?
2. What is the relationship between professional identity formation and nursing students' readiness for inter-professional learning and collaboration in healthcare?

#### **Significance of the study:**

Yu et al (2020) in their study which titled "Effectiveness of simulation-based inter-professional education for medical and nursing students in South Korea" concluded that they observed the effect of inter-professional education on cultivating self-confidence and recognizing the importance of inter-professional collaboration between medical professions. It can be inferred that exposure to collaboration situations through Inter-professional education leads to a positive perception of inter-professional learning. However, even after their inter-professional education experience, existing perceptions of the role of other professional groups in the collaboration situation did not change, which shows the limitations of a one-time short-term program. This suggests that efforts should be made to ensure continuous exposure to social interaction experiences with other professions.

Emphasizing IPL was proposed as an effective way of preparing medical students for future work contexts where inter-professional collaboration may improve patient care and outcomes. In their study on promoting IPL between biomedical science and medicine; Lead beater et al (2021) reported that their students reported that they gained a good understanding of the importance of working collaboratively and how each professional plays a crucial role in treating the patient. Understanding the way IPL influences healthcare providers' ability to effectively work together has incredible significance, as collaboration and teamwork are crucial for a high quality of care. On the contrary, uncoordinated teamwork and collaboration failures are expected to cause serious errors in managing healthcare (Atwa, 2023)

Both the culture of professional practice and educational context play roles in enhancing the professional identity of nursing students. Students who perceive support from their educators and multidisciplinary teams during their studies and beyond graduation are more inclined to embrace a receptive attitude towards learning and collaboration with fellow healthcare professionals. The crucial element here lies in an individual's self-assessment of

their value, which serves as a primary motivator to excel in the profession. This mindset encourages the sharing of knowledge, skills, and expertise, enabling each team member to contribute their strengths towards meeting patient needs.

Consequently, delving into the formation of professional identity throughout the educational journey and career trajectory becomes imperative. Such exploration enhances preparedness for learning and collaborative engagement within the healthcare domain, thereby advancing the nursing profession. The study's outcomes are aimed at establishing a foundation for Egyptian institutions to incorporate inter-professional learning and collaboration into the curricula of various healthcare programs. This integration could empower students to evolve into adept healthcare providers while comprehending the distinct roles of each profession involved.

## Subjects and Methods:

### Research design:

A descriptive correlational research design was utilized for achieving the aim of the present study and answering research questions.

### Research setting:

This study was conducted at Faculty of nursing, ensuring a focused and relevant environment for the study's investigation. Modern University for Technology and Information (MTI), Faculty of Nursing established by the Presidential Decree No. (3195), for the year 2009, Awarded Quality of Education Accreditation 2021 by NAQA, study years eight semesters in four years plus one internship year, it graduated nine batches of nursing students from 2014 to 2022 with total numbers 1019 students.

### Sample:

For this study, a convenient sampling method was employed to gather participants from various stages of the nursing program (n=181). Specifically, nursing students from the third level (encompassing semesters 5 and 6), the fourth level (semesters 7 and 8), and those participating in the internship program were selected as the study's subjects.

### Tools of data collection:

Depending on the theoretical literature and previous studies; data were collected using the following three tools:

**The Readiness for Inter-professional Learning Scale (RIPLS)**, adapted from (Parsell and Bligh's, 1999) formed the primary instrument for data collection. The questionnaire was structured into two principal sections (A&B).

**Personal Data Sheet:** This section aimed to capture demographic details such as; age, gender, and academic level (semester) of the participating students.

**The Readiness for Inter-professional Learning Scale (RIPLS):** This section facilitated students in providing feedback on different dimensions of inter-professional learning (IPL) and assessing their readiness for such collaboration. The RIPLS encompassed 19 self-reported items, grouped into four distinct domains; the first focused on aspects of teamwork and collaboration (items 1–9). The second focused on identifying negative professional perceptions towards other professions (items 10–12). These items were phrased negatively and were reverse-scored for analysis (strongly disagree = 5, disagree = 4, neutral = 3, agree = 2, strongly agree = 1). The third focused on cultivating positive professional identity (items 13–16). While the fourth focused on the comprehension of roles and responsibilities of various professionals (items 17–19). **Scoring system:** Responses were recorded on a 5-point Likert scale, ranging from strongly agree (5) to strongly disagree (1), thereby facilitating a comprehensive analysis of student responses. A higher overall mean percentage score indicated a positive attitude or preparedness for IPL. The total score of the RIPLS questionnaire was categorized into two groups: Low level of readiness towards IPL (less than 60%), while a high level of readiness towards IPL ( $\geq 60\%$ ).

**Chiba Inter-professional Competency Scale (CICS29)** was employed, guided by (Sakai et al., 2017) which had been designed to measure inter-professional collaboration in healthcare, comprising 29 items, this scale encompasses six distinct domains; attitudes and beliefs as a professional (6 items), team management skills (5 items), actions for accomplishing team goals (5 items), providing care that respects patients (5 items), attitudes and behaviors that improve team cohesion (4 items), and fulfilling one's role as a professional (4 items). **Scoring system:** Participants were asked to respond on a 5-point likert scale, ranging from strongly disagree (1) to strongly agree (5). A higher total mean percentage score indicated a relatively elevated level of inter-professional collaboration. The overall score from the CICS29 questionnaire was divided into two categories for assessment. According to cut off point; the satisfactory level of inter-professional collaboration skills was considered ( $\geq 60\%$ ), while unsatisfactory level of inter-professional collaboration skills was considered ( $< 60\%$ ).

**Professional Identity Scale for Nursing Students (PISNS)** which was developed with guidance from (Hao et al., 2014), and comprises 17 items. This scale encompasses five distinct dimensions: Professional Self-Image (3 items), benefits of retention and risk of turnover (3 items), social comparison and self-

reflection (5 items), independence of career choice (3 items), and social modeling (3 items).

**Scoring system:** Participant responses were assessed using a 5-point likert scale, ranging from strongly disagree (1) to strongly agree (5).

**Validity of the tools:**

The instruments underwent evaluation by a panel comprising three experts specializing in nursing administration. Their role encompassed assessing both the content and face validity of the instruments. Adjustments were made in accordance with the panel's feedback, particularly addressing the clarity of sentences and the suitability of the content. Additionally, these experts were requested to provide insights on the instrument's overall structure and layout. This included considerations such as the clarity of questionnaire instructions, readability, ease of comprehension, sequence of questions, format, overall visual presentation, and the time required for completion.

**Reliability:**

The tools' reliability was assessed to verify its consistency using the alpha coefficient test. Internal consistency using Cronbach's alpha was (90%) for The Readiness for Inter-professional Learning Scale (RIPLS); (80%) for The Chiba Inter-Professional Competency Scale (CICS29) and (83%) for The Professional Identity Scale for Nursing Students (PISNS) which indicated high reliability.

**Ethical considerations:**

An official approval to conduct the intended research was duly granted by the research ethics committee of the Faculty of Nursing at MTI University. Participation in the study was entirely voluntary and contingent upon the subjects' willingness to provide informed consent. Each participant had expressed their acceptance and comprehension of the study's details before signing the informed consent form.

The ethical framework encompassed several crucial principles; clarity and purpose: Subjects were thoroughly briefed about the study's objectives and nature, withdrawal: Participants were informed of their prerogative to withdraw from the study at any point without repercussions, confidentiality: The confidentiality of participants' information was strictly maintained, with no unauthorized access by external parties without prior participant consent, minimal Risk: Participation carried no inherent risks.

**Data collection technique:**

Upon receiving the approval letter from the Vice Dean of Teaching and Student Affairs, the researchers proceeded to acquire the names of nursing students (third and fourth levels) and intern students from the Student Affairs office at the Faculty of Nursing, MTI University. This step was taken to secure their consent for participating in the study.

Following this, the researchers utilized the Google Forms application to create the questionnaires. A virtual meeting was conducted with the students via Microsoft Teams, where the researchers explained the study's purpose, significance, and potential benefits, aiming to garner their cooperation.

The clinical instructors were responsible for overseeing the students, compiled a list of participants and their respective work settings. This information was instrumental in distributing the survey link. Moreover, the researchers established designated online hours (1-2 hours per day) to address any queries or provide clarifications that the students might require.

**Pilot study:**

A pilot study was carried out on (n=18) (10%) of the total sample of nursing students from various stages of the nursing program specifically with the third level, the fourth level and those participating in the internship program before data collection to ensure the applicability of the tool and to estimate the time needed to complete the used tools. No recommended modification was done. The pilot sample was included.

**Statistical Analysis:**

The gathered data underwent coding and were subsequently input into the Statistical Package for the Social Sciences (SPSS) program, version 25. The data were subjected to appropriate statistical methodologies for analysis. Descriptive statistics, encompassing frequency, mean, and standard deviation, were employed to examine the data in this research.

Moreover, pertinent statistical assessments were employed to gauge significance. These included the One-way ANOVA and correlation coefficient, which were instrumental in elucidating connections among the variables under scrutiny. In all statistical analyses, the p-value was used to determine the level of significance. A significance threshold of  $\leq 0.05$  was established for all statistical examinations, serving as the criteria to evaluate the degree of significance in the observed results.

Results:

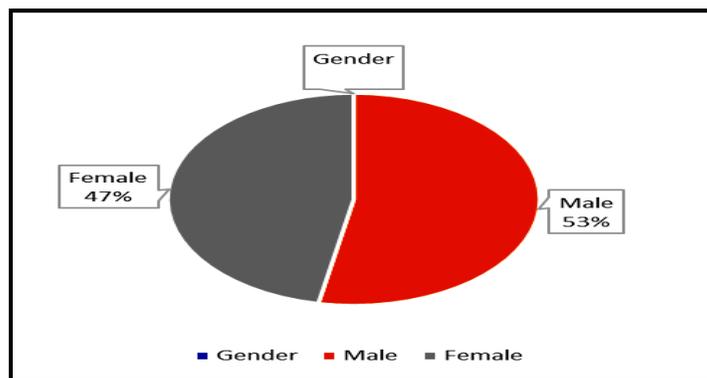


Figure (1): Distribution of nursing students according to their gender (n=181)

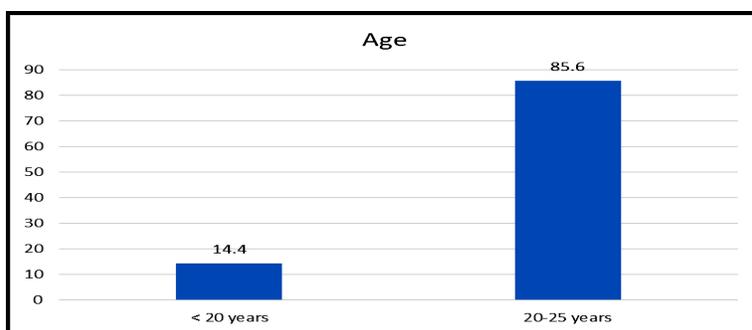


Figure (2): Distribution of nursing students according to their Age (n=181)

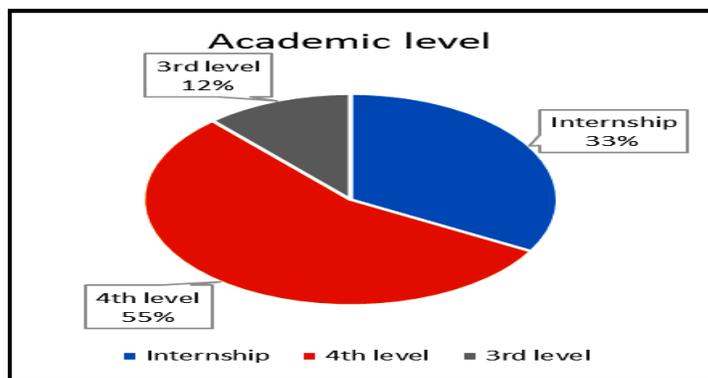


Figure (3): Distribution of nursing students according to their academic level (n=181)

Table (1): Mean and mean percentage of nursing students’ responses regarding Readiness for Inter-professional Learning dimensions (RIPLS) (n= 181).

Readiness for Interprofessional Learning (RIPLS)	Min	Max	Mean	SD	Mean%
1. Team work and collaboration	26	45	40.40	4.71	<b>89.77</b>
2. Negative professional identity	4	15	10.41	2.98	69.43
3. Positive professional identity	8	20	17.44	2.66	<b>87.21</b>
4. Roles and responsibilities	6	15	10.77	2.36	<b>71.82</b>
<b>Total</b>	57	95	79.03	9.05	<b>83.19</b>

Descriptive statistics (Mean &SD, Mean %)

**Table (2): Mean and mean percentage of nursing students' responses regarding Inter-professional Competency dimensions (CICS) (n= 181).**

<b>The Interprofessional Competency (CICS)</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Mean%</b>
1. Attitudes and beliefs as a professional	12	30	26.57	3.60	<b>88.58</b>
2. Team management skills	13	25	21.93	2.98	87.71
3. Actions for accomplishing team goals	12	25	21.73	3.04	86.94
4. Providing care that respects patients	12	25	21.97	2.97	87.87
5. Attitudes and behaviors that improve team cohesion	11	20	17.64	2.39	88.20
6. Fulfilling one's role as a professional	11	20	17.78	2.20	88.90
<b>Total</b>	86	145	127.62	15.11	<b>88.02</b>

*Descriptive statistics (Mean &SD, Mean%)*

**Table (3): Mean and mean percentage of nursing students' responses regarding Professional Identity dimensions (PISNS) (n= 181).**

<b>Professional Identity for nursing students (PISNS)</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Mean%</b>
1. Professional self-image	5	15	13.11	2.30	87.40
2. Benefit of retention and risk of turnover	4	15	11.60	2.53	77.31
3. Social comparison and self-reflection	5	25	21.45	3.50	85.79
4. Independence of career choice	3	15	12.65	2.21	84.31
5. Social modeling	3	15	12.92	2.22	86.15
<b>Total</b>	21	85	71.72	11.06	<b>84.38</b>

*Descriptive statistics (Mean &SD, Mean%)*

**Table (4): Correlation Matrix for Total Dimensions of Professional Identity formation for Nursing Students (PISNS), Readiness for Inter-professional Learning, and Total Inter-professional Competency among Nursing Students' Responses (n=181).**

<b>Dimensions</b>		<b>Total Readiness for Interprofessional Learning (RIPLS)</b>	<b>Total Interprofessional Competency (CICS)</b>
Total Interprofessional Competency (CICS)	r	0.729	
	P	<b>0.000*</b>	
Total Professional Identity for nursing students (PISNS)	r	0.620	0.671
	P	<b>0.000*</b>	<b>0.000*</b>

*Correlation Matrix \*A significant level at  $p \leq 0.05$*

**Table (5): Relationship between nursing students' personal data and their total Readiness for Inter-professional Learning (n=181).**

<b>Personal data</b>	<b>Total Readiness for Interprofessional Learning (RIPLS)</b>		<b>One-way ANOVA</b>	
	<b>Mean</b>	<b>SD</b>	<b>F</b>	<b>P</b>
<b>Gender:</b>				
Male	78.88	9.16	0.85	0.36
Female	81.60	6.88		
<b>Age:</b>				
< 20 years	76.44	9.51	1.63	0.20
20-25 years	79.31	8.98		
<b>Academic level:</b>				
3 <sup>rd</sup> level	77.95	7.07	0.18	0.84
4 <sup>th</sup> level	79.09	9.24		
Internship	79.31	9.45		

*One-way ANOVA \*A significant level at  $p \leq 0.05$*

**Table (6): Relationship between nursing students’ personal data and their total inter-professional competency (n=181).**

Personal data	Total Interprofessional Competency (CICS)		One-way ANOVA	
	Mean	SD	F	P
<b>Gender:</b>				
Male	127.57	15.14	0.04	0.83
Female	128.60	15.36		
<b>Age:</b>				
< 20 years	119.56	18.90	5.85	<b>0.02*</b>
20-25 years	128.52	14.43		
<b>Academic level:</b>				
3 <sup>rd</sup> level	130.00	14.44	0.58	0.56
4 <sup>th</sup> level	126.62	15.72		
Internship	128.49	14.35		

One-way ANOVA \*A significant level at  $p \leq 0.05$

**Table (7): Relationship between nursing students’ personal data and their total professional identity formation (n=181).**

Personal data	Total Professional Identity of Nursing Students (PISNS)		One-way ANOVA	
	Mean	SD	F	P
<b>Gender:</b>				
Male	71.54	11.21	0.82	0.37
Female	74.80	7.89		
<b>Age:</b>				
< 20 years	64.33	14.80	9.33	<b>0.00*</b>
20-25 years	72.54	10.31		
<b>Academic level:</b>				
3 <sup>rd</sup> level	70.90	15.62	0.41	0.67
4 <sup>th</sup> level	71.28	10.79		
Internship	72.78	9.65		

One-way ANOVA \*A significant level at  $p \leq 0.05$

**Table (8) Linear regression analysis for professional identity formation as perceived by nursing students in relation to their total readiness for inter-professional learning dimensions (n=181).**

Linear regression model	R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(Constant)		11.825	5.701		2.074	.039
<b>Total RIPLS</b>	.62	.758	.072	.620	10.575	<b>.000*</b>

a. Dependent Variable: Total PISNS

Linear regression analysis \*A significant level at  $p \leq 0.05$

**Table (9) Linear regression analysis for professional identity formation as perceived by nursing students in relation to their total Inter-professional Competency dimensions (n=181)**

Linear regression model	R Square	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(Constant)		9.036	5.217		1.732	.085
<b>Total CICS</b>	.67	.491	.041	.671	12.101	<b>.000*</b>

a. Dependent Variable: Total PISNS

Linear regression analysis \*A significant level at  $p \leq 0.05$

**Part I:** Nursing students' personal data (n= 181) figures from (1-3)

**Figure (1): Percentage distribution of study sample by gender** Shows that; (53.0 %) of nursing students were male.

**Figure (2): Percentage distribution of study sample by age** Indicates that; (85.6 %) of the nursing students were in age group 20- 25 years.

**Figure (3): Percentage distribution of study sample by academic level.** Reveals that; (55.2%) of the nursing students in the fourth academic level in nursing

**Part II:** Mean and mean percentage of nursing students' responses regarding dimensions related to readiness for inter-professional learning, inter-professional competency and formation of professional identity (n=181). (Table 1-3)

**Table (1):** Illustrates that the total mean percentage for readiness in inter-professional learning dimensions stood at (83.19%). which mean present a high level of readiness towards IPL ( $\geq 60\%$ ) Additionally, nursing students' responses were most prominent in the dimensions of teamwork and collaboration, positive professional identity, and roles and responsibilities, with mean percentages of (89.77%, 87.21%, and 71.82%) respectively. Conversely, the lowest percentage (69.43%) of nursing students' responses was related to the domain of negative professional identity.

**Table (2):** Presents data showcasing that the total mean percentage for Chipa inter-professional competency dimensions reached (88.02%). which mean the present of satisfactory level of inter-professional collaboration skills. Furthermore, nursing students' highest mean percentages (88.90%, 88.58%, 88.20%, and 87.87%) corresponded to domains titled "fulfilling one's role as a professional, attitudes and beliefs as a professional, attitudes and behaviors fostering team cohesion, and providing care that respects patients", respectively. Conversely, the least percentage (86.94%) of nursing students' responses related to actions aimed at accomplishing team goals.

**Table (3):** Illustrates that the total mean percentage for professional identity formation stood at (84.38%). Additionally, nursing students displayed their highest mean percentages (87.40%, 86.15%, and 85.79%) in areas related to professional self-image, social modeling, and social comparison and self-reflection, respectively. Conversely, the lowest percentage (77.31%) of nursing students' responses related to benefits of retention and risk of turnover domain.

**Part III: Correlation matrix between dimensions of nursing students' response**

**Table (4):** Demonstrates a markedly significant statistical correlation between the total scores of

Inter-professional Competency (CICS) and total Readiness for Inter-professional Learning (RIPLS) ( $r = 0.729, p \leq 0.000$ ). Furthermore, a highly significant statistical correlation emerged between the overall scores of professional identity for nursing students (PISNS) and total readiness for inter-professional learning ( $r = 0.620, p \leq 0.000$ ). Equally, a highly significant statistical correlation was evident between the comprehensive Professional Identity scores for nursing students and the total inter-professional competency ( $r = 0.671, p \leq 0.000$ ).

**Part IV:** Correlation between total nursing students' responses on readiness for inter-professional learning, inter-professional competency, professional identity dimensions, and their personal data (n= 181). (Table 5-7)

**Table (5):** Shows that there was no relationship between nursing students' personal data and their overall readiness for inter-professional learning (n=181).

**Table (6):** Indicates that there was a highly statistically significant relationship between nursing students' age and their total inter-professional competency dimensions ( $f = 5.85, p \leq 0.02$ ).

**Table (7):** Indicates that there was a highly significant relationship between nursing students' age and their total professional identity dimensions ( $f = 9.33, p \leq 0.00$ ).

**Part V:** Linear regression analysis for professional identity formation as perceived by nursing students. (Table 8-9)

**Table (8):** Presents that the total readiness for inter-professional learning was a significant predictor for the total formation of professional identity among nursing students ( $t = 10.575, p \leq 0.000$ ).

**Table (9):** Indicates that the total inter-professional competency was a significant predictor for the total formation of professional identity among nursing students ( $t = 12.101, p \leq 0.000$ ).

### Discussion:

Enhancing the professional identity of nursing students can be achieved through inter-professional learning, a process that contributes to heightened self-esteem. Consequently, this heightened self-esteem fosters an increased spirit of collaboration among diverse healthcare professionals. In terms of personal characteristics, the findings revealed that more than half of the study participants were male, approximately three-fourths fell within the age group of 20 to 25 years old, and half of them were at the fourth academic level in nursing. These results were different with a study conducted by Li et al. (2018), which investigated self-esteem and collaboration among students within the same age group.

In terms of mean scores and mean percentages pertaining to readiness for inter-professional learning among nursing students, the results indicated that roughly three-quarters of the study's participants exhibited the highest mean percentage of responses linked to teamwork and collaboration, as well as a positive professional identity. Furthermore, approximately two-thirds of the respondents expressed their views concerning the roles and responsibilities domain.

This result could potentially be attributed to the incorporation of innovative and diverse teaching methods, along with the utilization of educational platforms. These approaches have been employed by educators to cultivate a more engaging and stimulating learning environment, particularly during the COVID19 era. Notably, the implementation of strategies such as case studies and integrative assignments has contributed to the enhancement of multiple domains within the realm of inter-professional learning.

Furthermore, within the realm of inter-professional collaboration, students acquire the ability to engage in constructive dialogue, appreciating the significance of making optimal choices from among various alternatives. This process contributes to enhanced learning and a bolstered sense of professional identity. Additionally, a noteworthy aspect of teamwork that students encounter is the recognition that their collective success or failure is interdependent, thereby reinforcing the notions of roles and responsibilities. **Ors, (2018)** highlighted in his research that students exhibited the highest mean score percentage in readiness for learning. This observation aligns with the findings of **Salih et al., (2019)**, who emphasized that the enhancement of collaborative practice and teamwork skills can effectively amplify roles and responsibilities, consequently nurturing the development of professional identity. This trend is also mirrored in the study by **Lee et al., (2019)**, underscoring that nursing students showcased elevated levels of collaboration, professional identity, and roles and responsibilities.

Regarding the mean scores of nursing students' responses concerning inter-professional competency, it becomes evident that the majority of domains exhibit the highest mean percentages in relation to fulfilling one's professional role, attitudes and beliefs as a professional, behaviors fostering team cohesion, and providing respectful patient care. This trend can be attributed to students' eagerness to apply the knowledge, skills, and attitudes accumulated across each semester. This proactive engagement contributes to skill enhancement, with the understanding that the collective success hinges upon

the equitable distribution of roles and responsibilities and the alignment of viewpoints within the working context.

Moreover, the intensified focus on workplace assessments aimed at evaluating requisite expertise and essential competence within the job market, coupled with targeted student training, serves to heighten their competency. This, in turn, guarantees the delivery of nursing care at the utmost caliber throughout the academic journey.

**Thompson et al (2020)** emphasized that educational programs for learners of health professions have occurred in uni-professional teaching and learning settings in their own schools or colleges by same profession' members. However, in real life, healthcare is typically delivered by a team of diverse healthcare providers who can hardly work separately from other professionals. One healthcare professional alone cannot meet a patient's needs in the current care model. A useful therapeutic partnership between the providers of healthcare and patients now consists of providers from diverse specialties, in addition to those who are seeking medical care as well as their families and caregivers. As part of the process of providing adequate preparation for future healthcare team members, IPL is the groundwork upon which learners become competent and safe healthcare team members.

Furthermore, aligning with the findings of **Yune et al., (2020)**, nursing students exhibited the highest perceptions of the significance, preference, and efficacy of Inter-professional education, as well as the nine inter-professional competencies, compared to medical students who demonstrated relatively lower perceptions in these domains.

Examining the findings concerning mean scores from nursing students' responses regarding professional identity, the results emphasized that dimensions like professional self-image, social modeling, and social comparison and self-reflection garnered the highest mean percentages among nursing students. This outcome is intricately tied to the development of their individuality, as well as a sense of pride in their professional identity. The cultivation of nursing students' self-image can be seen as a natural outcome of their personality maturation, as they take pride in their chosen profession.

Moreover, the formation of a professional image can be attributed to nursing students' intrinsic sense of pride and genuine interest in their chosen field. A significant number of nursing students indicated their inclination towards embracing career autonomy, acquiring new skills, showing respect, and fostering collaboration within the healthcare team. Their active participation in medical and nursing conferences or

seminars plays an essential role in enhancing future career stability and minimizing turnover rates.

**Shi et al., (2020)** corroborated these findings by illustrating that nurses emerged as a formidable frontline during the battle against COVID-19, drawing media attention that highlighted the pivotal role of nursing in the community. This coverage subsequently bolstered the positive image and mental perception of nursing students. Notably, exposure to accounts of medical staff experiences enabled nursing undergraduates to deeply identify with their professional team, contributing to their sense of professional pride.

These observations align with the study by **Adam et al., (2021)**, which revealed that approximately three-quarters of surveyed nurses possessed a contented professional image. The domain of assertiveness was also found to be satisfactory, with the majority of respondents expressing satisfaction regarding their self-responsibility domain.

Regarding the correlation matrix encompassing the total dimensions of nursing students' responses, the findings underscore a notably significant statistical correlation between the cumulative Chipa inter-professional competency and total readiness for inter-professional learning. A similar significant correlation is observed between the overall professional identity of nursing students and their readiness for inter-professional learning. Additionally, a significant relationship is evident between the total professional identity of nursing students and total Chipa inter-professional competency. These outcomes reaffirm prior findings, further emphasizing that heightened readiness to learn corresponds with increased competency, subsequently fostering a heightened sense of professional value and pride in one's chosen field.

This observation aligns with the research conducted by **Coplu & Tekinsoy Kartın, (2019)**, who determined that practitioners' perception of the value of life, their societal role, the purpose of their profession, and their assessment of their professional value collectively contribute to their professional identity and self-concept.

This may be attributed to the role of inter-professional learning in preparing nursing students for clinical practice, facilitating stronger professional relationships, and ultimately enhancing collaborative readiness among diverse nursing students. These findings are also consistent with the study by **Hermasari et al., (2019)**, which reveals a substantial positive correlation between student readiness for interprofessional collaboration and clinical decision-making ability.

Concerning the relation between nursing students' personal attributes and the overall readiness for

interprofessional learning, Chipa interprofessional competency, and total professional identity, a consistent thread among these associations was age. This observation underscores a notable and meaningful link between age and all the aforementioned domains. The implications of this discovery are explored differently, as demonstrated in a study undertaken by **Bijani et al., (2019)**. Their research revealed a negative correlation between age and the professional values exhibited by students at large. This negative correlation was attributed to various factors, including clinical experience and the weight of educational and personal responsibilities, particularly during the initial phases of a nursing student's life journey.

It is noteworthy that a significant predictor of the perceived formation of professional identity among nursing students, as indicated by the linear regression analysis, was the combined readiness for inter-professional learning and Chiba inter-professional competency. This outcome emphasizes the value of a learning environment that promotes increased education and collaboration with healthcare team members throughout the course of study or internship training. Such an environment is instrumental in elevating students' competency, with a specific emphasis on instilling moral values and principles to enhance performance, ultimately contributing to the enhancement of their professional identity.

This study's result is in harmony with the findings of **Haghighat et al., (2020)**, who established a positive correlation between the development of professional identity and the cultivation of moral competencies in nursing students. This implies that the progression of professional identity may be intricately linked to an augmented interest in the profession, or conversely, the professional value system is a pivotal facet of one's professional identity.

In contrast, the study conducted by **Chen et al., (2020)** reported a decline in students' professional identity after the completion of their nursing studies. Their expectations of being well-prepared for the practical realm of nursing were not fully met. This finding underscores the significance of a conducive learning environment that fosters a sense of security and support for students as they engage in their actions.

### Conclusion:

The study revealed that the educational system attains its objectives by addressing key components, such as the presence of qualified instructors and the engagement of conscientious students who harbor a genuine enthusiasm for learning. The strategic use of educational methodologies that effectively enhance

the development of students' skills and competencies further contributes to this achievement.

The research outcomes adeptly addressed the research inquiries, ultimately demonstrating that nursing students exhibit a positive inclination and readiness towards inter-professional learning. Additionally, the students showcased a commendable level of inter-professional collaboration skills, which proved satisfactory. Furthermore, the study's conclusions underscored the presence of highly statistically significant correlations. One such correlation was identified between the cumulative inter-professional competency and the overall readiness for inter-professional learning. Similarly, a significant correlation emerged between the total professional identity of nursing students and their preparedness for inter-professional learning. This correlation extended to the relationship between the total professional identity of nursing students and their cumulative inter-professional competency.

#### Recommendations:

In light of the study findings, the subsequent recommendations were advised:

- Incorporate professional identity components within all nursing curricula to elevate students' self-esteem and instill a heightened sense of professional value.
- Foster a culture of ongoing education among educators and clinical instructors to facilitate a dynamic exchange of knowledge among members of the healthcare team.
- Diligently select clinical settings and internship placements to optimize the practical application of acquired knowledge and offer avenues for the development of enhanced competencies.
- Seamlessly integrate leadership roles and collaborative practices within undergraduate studies, preparing students for their forthcoming roles in real-world scenarios.
- Encourage nursing educators to nurture students' sense of identity and amplify their values, leading to improved competency, heightened professional value, and a stronger sense of teamwork.
- Extending the scope of the study to encompass nursing students across both private and governmental universities in Egypt, with the aim of uncovering factors that could potentially influence professional identity, is recommended.

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