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## Underappreciation of Nurses in Pakistan: A Silent Catalyst for Burnout

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Underappreciation of nurses in Pakistan is one of the major causes of their burnout experiences every day. This lack of recognition in the workplace exacerbates their difficulties and emphasizes the need to transform systems. Nursing is often perceived in a demeaning manner in most developing countries like Pakistan, and if their skills are not appreciated, dissatisfaction, apathy, and resentment prevail. Appreciation has much to do with self-identity, which also seems to be the issue with many female nurses. They often feel powerless, courtesy of the ever-evolving self-image constructed within the patriarchal health organizations. Contrary to expectations, the position of nurses is not highly regarded in our society, and as a result, they are subject to disappointment and humiliation<sup>1</sup>. Mental exhaustion and loss of ambition are some of the issues that most Pakistani nurses go through, as they are constantly asked to play second or even third fiddle. In Pakistan, nurses grapple with issues of self-identity and a cultural mindset that reduces nursing to menial work. It is not unusual for nursing care to be regarded as an extension of household chores, which explains why nurses have been socially portrayed as stereotypically low-skilled caregivers who belong to the low status. This perception is quite dangerous as it puts within reach the historical and false idea in Pakistan that nurses are poor women seeking to earn a living out of a respectable profession<sup>2</sup>. Public lack of acknowledgment not only devalues nurses in the eyes of society but also affects their motivation and job satisfaction, leading to increased chances of burnout and stress. The professional image of nurses is also one of the factors. In the hierarchy of the healthcare system, nurses are always placed at the bottom and made to perform tasks handed down to them by doctors, which is why they feel overshadowed<sup>3</sup>. Nurses are often perceived as merely listening and following orders without showcasing their intelligence, which is why they have no value in nursing. It dehumanizes their professional identity, deflating nurses' morale and prompting more stress and weakness. The compounded effect of these issues – disempowerment, societal undervaluation, and professional devaluation – brings about a situation in which nurses are distanced between themselves and their work and co-workers. Burnout is somewhat understandable because, with no acknowledgment of their efforts across self-role and professional roles, the nurses experience emotional and physical fatigue without support or justification. To eliminate structural shortcomings that lead to a sense of underappreciation, some strategies may help. Focus, emphasis, and appreciation of the contributions nurses make, be it emotional, intellectual, or physical, must be made within the organization as well as outside of it. This can be done through awards, appreciation programs, or public announcements. Another one is fair pay, which is expected of a nurse. Courses or programs in leadership, education, and specialization may be offered to nurses to boost their confidence and increase their job satisfaction. Moreover, harmonizing nurses' participation in decision-making within the healthcare institution is vital in raising nurses' status in patient care and management so that they do not feel irrelevant within the team of healthcare service providers.





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## Original Article



## Assess Nursing Student Perception Regarding Teamwork in Private Nursing College Karachi

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## ABSTRACT

Through strategies like team-based learning and interprofessional education, the importance of teamwork in nursing education is highlighted. **Objective:** To assess nursing student perception regarding teamwork in a private nursing college in Karachi. **Methods:** A validated questionnaire was used in this cross-sectional study at Horizon School of Nursing in Pakistan, among 175 Bachelor of Science in Nursing students. Data were gathered over the course of four months, and demographic correlations were examined using SPSS version 26.0. The study placed a high priority on ethical considerations. **Results:** The attitudes and perspectives of nursing students on teamwork in healthcare settings are examined in this study. Although 80% of participants acknowledge shared duties, a considerable number (76%) exhibit aversion towards working in teams. Issues including unequal workload distribution (52.6%) and perceived low importance on personal opinions (57.1%) are common among those surveyed. Furthermore, most of the respondents saw team meetings as time-consuming (76%), ineffective (57.1%), and leading to a decrease in workload (68%). Still, the majority (73.7%) acknowledge that teamwork improves talent as well. **Conclusion:** The study on nursing students' perspectives of cooperation reveals a complicated environment characterized by problems such as incomplete assignments, shared responsibility, and non-participation.

## INTRODUCTION

A team, consisting of two or more individuals with a common purpose, collaborates through interdependence, assigned roles, tasks, and decision-making to achieve a shared goal [1]. Small groups of students are formed to study material, investigate a certain subject, finish cases, projects, and group assignments, respond to a few thought-provoking questions, participate in idea sharing, and share some findings with other group members [2]. In addition, teamwork occurs when individuals collaborate to achieve a common objective, that objective could be either professional or personal. Student-centered, highly organized, and supported by research, team-based

learning (TBL) places students in permanent, teacher-led teams of six to seven students [3]. To ensure quality education and a secure learning environment, students must collaborate effectively. Recognizing this, academic programs have increased interprofessional education (IPE) to better prepare graduates for teamwork [4]. The Nuuyoma study revealed that group interaction enhances essential skills like communication and critical thinking [5]. Moreover, there is an importance of team work in clinical work place [6]. While clinical work place or clinical placement is practical training in a healthcare setting where students apply theoretical knowledge and develop





clinical skills under supervision. Similarly, social interdependence theory shows that better academic performance and positive peer relationships are linked to cooperative, rather than competitive or individualistic, goal structures [7]. The division of learning activities into four phases, active and major authentic issues, the assessment of mastery of core knowledge, teacher-guided pre-class preparation learning, and peer evaluation [8]. Research on the impact of teamwork on productivity development revealed a significant 14% increase in workers' output on average when collaborative abilities were implemented. Teamwork proves more valuable than solitary production, as collective efforts in task completion, discussions, and debates contribute to the creation of a comprehensive and accurate foundation. This, in turn, leads to enhanced productivity and development outcomes [9]. Nursing students, trained to be healthcare professionals collaborating within hospital teams, must be exposed to team-based work during their training. Evaluations in group settings serve as a method for practicing teamwork skills. Given the evolving landscape of healthcare requiring creative and interdisciplinary approaches, the ability of nursing students to effectively work in teams is crucial for their future practice [10]. The Joint Commission, an American accrediting body, discovered that poor communication among interdisciplinary team members was responsible for 75% of unfavorable occurrences that resulted in fatalities [11]. Due to the global nursing crisis, unlicensed healthcare aides, enrolled nurses, and Licensed practical nurses are being used to fill nurse shortages. To maximize care, cooperative practices both within and between grades are needed. The possible influence of cooperation on nursing care emphasizes the necessity to investigate and improve teamwork-related concerns [12]. In nursing, teamwork is valued and emphasized. To achieve the objectives of better education outcomes and good grades needs, students must collaborate. In a nursing facility, collaboration makes providing care easier and more efficient [13]. Students have shown a desire to establish mentorship connections at all levels, with the assistance of neighborhood initiatives like health fairs. Graduate students are eager to mentor others, which promotes an appreciation of working across professional boundaries. It was noted that improving communication and treating patients with respect is essential to raising the standard of patient care [14]. Understanding students' attitudes towards teamwork is essential for shaping the curriculum to ensure it adequately prepares them for the demands of real-world education settings.

The study aimed to identify potential gaps in the current educational approach and inform targeted interventions to enhance teamwork skills during students' formative years.

The findings are expected to contribute to the ongoing improvement of nursing education, fostering graduates who are well-equipped for collaborative practice.

## METHODS

A cross-sectional descriptive design was used for this study. The duration of this study was January 2024 to March 2024. The study was conducted at the Horizon School of Nursing and Health Sciences, Karachi, Pakistan, using convenience sampling technique. The sample size was calculated using the OpenEpi version 3.0 software. With a total population of 320 nursing students, a 95% confidence interval and a 5% margin of error were used as the input parameters. This calculation generated a required sample size of 175 participants, which was achieved in the study. The participants for the study were all students of generic Bachelor of Science in nursing. Both male and female and 18 years and above. The Exclusion Criteria were all the students of diploma and certification courses and those students who are not willing to participate. The duration of the study was four months after the approval of the proposal. A pretested adapted questionnaire used in this study. It was available on open access and was reviewed by subject experts to ensure content validity and it consists of two components. The first Component was demographic data (age gender sex and academic year). The second Component was the nursing student perception teamwork tool. Ethical approval for the study was obtained from the Horizon School of Nursing and Health Sciences before data collection with reference number HSNHS/2023/512. The data were gathered after gaining consent and the authorized person's agreement to collect the data. The researcher explained the objective, technique, and significance of the study to the participants. The statistical analysis of the data was conducted using SPSS version 26.0. The analysis primarily focused on calculating frequencies and percentages to describe the distribution of responses for each item on the teamwork perception questionnaire. No inferential statistical tests (like chi-square, t-tests, or regression analysis) were applied since the aim was to provide a descriptive overview of students' perceptions. The study's needs, goals, methods, and values were explained to the participants. Subjects were allowed to ask questions about the study, and if any were raised, they were answered. The participants signed a permission form after receiving full disclosure before completing the inquiry. Every participant's privacy and anonymity were protected. The completed survey was secured in the locker.

## RESULTS

Table 1 shows the results of demographic variables, including age, gender, year of education, and relationship



status for the study participants. Out of the total participants, the majority of the participants 92.6% (n=162) fell within the 20-24 age range. In terms of gender distribution, 81.7% (n=143) were male while 18.3% (n=32) were female. Regarding the year of education, most of the study participants belonged to 2nd year GSN 38.3% (n=67). In terms of Relationship status, 88.6% (n=155) were single and 11.4% (n=20) were married.

**Table 1:** Demographic Characteristics of the Participants

| Variables                  | Frequency (%) |
|----------------------------|---------------|
| <b>Age</b>                 |               |
| 20-24                      | 162 (92.6)    |
| 25-29                      | 11 (6.3)      |
| 30-Above                   | 2 (1.1)       |
| <b>Gender</b>              |               |
| Male                       | 143 (81.7)    |
| Female                     | 32 (18.3)     |
| <b>Year of Education</b>   |               |
| 1 <sup>st</sup> Year       | 53 (30.3)     |
| 2 <sup>nd</sup> Year       | 67 (38.3)     |
| 3 <sup>rd</sup> Year       | 33 (18.9)     |
| 4 <sup>th</sup> Year       | 22 (12.6)     |
| <b>Relationship Status</b> |               |
| Single                     | 155 (88.6)    |
| Married                    | 20 (11.4)     |

Table 2 shows the result of Nursing Students' Perception Regarding Teamwork. A significant proportion of students (76%) reported that some team members do not participate, while 56.6% noted that certain members fail to complete their assigned tasks. Additionally, 52.6% of students indicated that roles and work are not distributed equally, and the same percentage believed that some members achieve good grades without contributing. Moreover, 80% of students reported shared roles (leader, secretary, presenter), and 71.4% observed that members remain engaged and serious during discussions. Moreover, 69.7% preferred working in teams, while 62.3% agreed that teamwork improves academic performance. Most students (68%) felt that working in a team reduces workload, and 73.7% stated that teamwork enhances interpersonal skills. However, 54.9% believed that teamwork increases their workload, and 62.3% agreed that group assignments cause undue stress.

**Table 2:** Nursing Students' Perception of Teamwork

| S. No. | Statement   | Yes           | No        |
|--------|---|---------------|-----------|
|        |   | Frequency (%) |           |
|        | Some members do not participate.                              | 133 (76)      | 42 (24)   |
|        | Members share roles such as leader, secretary, and presenter. | 140 (80)      | 35 (20)   |
|        | Group assignment is done by one student.                      | 70 (40)       | 105 (60)  |
|        | Some group members forget to do their share work.             | 99 (56.6)     | 76 (43.4) |

|  |   |            |            |
|--|---|------------|------------|
|  | Some members get good grades without doing work.                              | 92 (52.6)  | 83 (47.4)  |
|  | Members do not share work equally.  | 92 (52.6)  | 83 (47.4)  |
|  | Group members do not respect everyone's opinion.                              | 75 (42.9)  | 100 (57.1) |
|  | Team meetings don't produce fruitful results.                                 | 75 (42.9)  | 100 (57.1) |
|  | Every member seems excited and serious during team discussions.               | 125 (71.4) | 50 (28.6)  |
|  | Team meetings are a waste of time.  | 42 (24)    | 133 (76)   |
|  | Do you prefer doing projects in a team or individually?                       | 106 (60.6) | 69 (39.4)  |
|  | Student's personal preferences on working in a team.                          | 122 (69.7) | 53 (30.3)  |
|  | Would you prefer working in a team if it reduces your workload?               | 119 (68)   | 56 (32)    |
|  | For you does working in a team yield better grades than working individually? | 109 (62.3) | 66 (37.7)  |
|  | Does working in a team increase workload for you?                             | 79 (45.1)  | 96 (54.9)  |
|  | Does working in a team enhance your people skills?                            | 129 (73.7) | 46 (26.3)  |
|  | Do group assignments make you unnecessarily busy?                             | 66 (37.7)  | 109 (62.3) |

## DISCUSSION

Students pursuing healthcare professions need the necessary tools and methods to enhance their teamwork skills to ensure their competence as safe providers within the increasingly intricate healthcare system [15]. The current study included 175 participants, predominantly male (81.7%), aged 20 to 24, with a majority (38.3%) in their second year. In contrast, another study with 423 participants had an older age group (25 and above) and a majority of female [16]. In a study carried out in Norway in 2021, 59 students took part (n = 59, 26.7%), spanning ages from 21 to 52 years, and the majority of participants, accounting for 88.1%, were female students. The present study result showed that nursing students have a moderate level of perception about teamwork. In another study conducted in Australia in 2017, the results revealed that approximately 23% of respondents criticized university teamwork assessments for lacking authenticity compared to real-world work contexts [17]. In the current study, it was observed that a significant majority of participants (57%) did not express respect for every person's opinion. This finding stands in contrast to a separate research study, where individuals were found to experience environments characterized by a positive culture, as highlighted by students using the term "mutual respect" [18]. The present study revealed that a majority of students (80%) shared roles like leader, secretary, and presenter. This contrasts with another study, suggesting that assumptions about hierarchies and power dynamics as obstacles to achieving Interprofessional Education for Shared Decision-Making goals may not hold [19]. This study demonstrated that a substantial majority of participants (69.7%) expressed personal preferences for working in a team. Similarly,



another study found that a majority of participants felt at ease working in a group [20].

## CONCLUSIONS

The investigation into nursing students' perceptions of teamwork underscores a diverse and nuanced landscape. While a substantial proportion reports non-participation in team activities, there is a positive trend with the majority sharing responsibilities within teams. Noteworthy challenges include instances of incomplete assignments and academic success without significant effort. The study highlights the importance of addressing challenges and tailoring strategies to foster effective teamwork in the academic setting, recognizing the need for nuanced approaches to accommodate the diverse perspectives and preferences among nursing students.

## Authors Contribution

Conceptualization: AB, AK

Methodology: AK, AB, BK, WK, MUH, HBK, AB

Formal Analysis: AK, AB, HS, RA

Writing Review and Editing: YK, BK, MUH, HBK, RA

All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest.

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## Original Article



## Assess Factors Affecting Absenteeism among Undergraduate Nursing Students in Private Institute Karachi

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## ABSTRACT

Absenteeism is a serious discipline issue among students worldwide. Many factors contribute to absenteeism, including a lack of appropriate resources, a lack of academic staff, or a lack of equipment. **Objective:** To assess factors affecting absenteeism among undergraduate nursing students in private institutes. **Methods:** A cross-sectional analytical study was carried out at the Allied Institute of Nursing and Health Sciences in Karachi, Pakistan. A total of 109 undergraduate nursing students were chosen through a convenient sampling technique. A valid and structured tool was used for data collection. There were two components: I socio-demographic data and II assessment of the various factors that contribute to absenteeism. SPSS version 27.0 was applied for data entry and analysis. **Results:** The majority of the participants were male having a mean age of 21-23 years. Moreover, the major factors that affect absenteeism among undergraduate nursing students are shortage of electricity in college (37.61 %), health issues 35 (32.11%) and lack of resources for transport to college 34 (31.19%). **Conclusions:** It was concluded that shortage of electricity, transportation facilities, and health issues are the major factors that affect absenteeism among undergraduate nursing students.

## INTRODUCTION

Absenteeism is a serious discipline issue among students worldwide [1]. In the field of education, the term "absenteeism" refers to the existence of students in a teaching and learning environment when they are required to be there, but the instructor is not notified beforehand, or the student is not granted the proper leave [2]. A high absenteeism rate among nursing students indicates a lack of enthusiasm and drive for learning. Student absenteeism has been observed to be a precursor to future low academic performance, educational dropout and strained interpersonal relationships. Additionally, truancy among students has been linked to dangerous and unlawful behaviour, anxiety, and sadness [2, 3]. Absenteeism may be attributed to several factors, including medical

disorders including fever, headaches, and stomach pains, as well as a lack of interest in specific courses or professors. General health problems, poor teaching skills, and no interest in the subject matter are further contributing factors. In addition, 145 (88.5%) of the respondents named family problems such as taking care of a sick parent, spouse, or child as a primary cause of absenteeism. Another big factor mentioned by 110 (72.4%) was physical illness. Furthermore, 93 (57.0%) respondents concurred that students receiving financial aid for their education without receiving payment for their labour was linked to absenteeism. Work overload was cited by 136 (89.4%) as the reason for clinical area absenteeism [4, 5]. Because nursing is a profession that deals with the care of



the most precious people in the world, nursing schools must develop competent nurses who possess the qualities of knowledge, skill, and discipline. Increased absenteeism among nursing students can have detrimental consequences since it will hinder the production of high-quality nursing graduates. Additionally, in nursing students, absenteeism level is elevated due to lack of financial help, less educational staff, travelling, less hands-on learning chances and practical experience [6-9]. Absenteeism is a major concern within nursing educational systems, and it's adversely impacting student's ability to acquire and retain the necessary knowledge and practical skills [10]. Students who remain frequently absent from classes face financial burdens, reduced learning opportunities, poor academic performance, and decreased clinical experience. On the other hand, students who are present and punctual benefit from both theoretical and practical aspects of their education, potentially leading to improved clinical skills, academic performance, and self-esteem. This, in turn, could decrease student dropout rates and help them achieve their goal of becoming nurses [11, 12]. Professional educational institutions have clear guidelines about mandatory attendance during lectures, labs, and clinical/practical hours. Even though there are clear guidelines and restrictions, absenteeism is increasing worldwide. Student absenteeism has grown to be a serious and persistent issue in many nations, particularly in developing nations. To improve nursing education and health care, absenteeism must be addressed immediately [13]. Moreover, limited data is available on factors affecting absenteeism among undergraduate nursing students in Pakistan.

This study aims to assess the factors that influence absenteeism in undergraduate nursing students and identify areas for improvement in the nursing field.

## METHODS

In Karachi, Pakistan at the Allied Institute of Nursing and Health Sciences, a descriptive cross-sectional analytical study design was conducted from July to October 2024. Additionally, a non-probability convenient sampling technique chose 109 undergraduate nursing students, both male and female studying in different years. The sample size was 109 and calculated by open EPI calculator version 3.0, taking into account a 5% margin of error and a 95% confidence level with population size (N): 172. The Department of Allied Institute of Nursing and Health Sciences in Karachi issued a letter of authority and clearance for the research (reference number ION-HS/1297), before data collection. The authorization guarantees the ethical conduct of the study and the protection of participant rights and anonymity. The applicants were informed of the purpose of the study, and the participants' freedom to decline or withdraw from the

study at any time. An open-access questionnaire developed by Bano et al., and informed consent were provided to the participating undergraduate nursing students [13]. Each participant gave their informed consent in both English and Urdu, before participating in the study. The inclusion criteria were all undergraduate nursing students (years I, II, III and IV) who were enrolled in the Bachelor of Science in Nursing at the Allied Institute of Nursing and Health Sciences and the participants who were willing to participate in the study and the exclusion criteria were all post-registered nurses (RN) students and the participants who were not willing to participate in the study. A two-part questionnaire consisting of demographic information and questions related to factors affecting absenteeism was used for data collection. While scoring the lowest and highest scores was possibly 1 to 5 by using the Likert scale. A percentage was computed based on the overall score. Data were entered and analyzed by SPSS software version 27. For demographic variables, and the factors affecting absenteeism among undergraduate nursing student's frequency and percentage were computed.

## RESULTS

103 (94.5%) subjects were male, while the remaining 06 (5.5%) were female. 22 (20.2%) subjects belonged to the below 20 age group, 72 (66.1%) belonged to the 21-23 age group, 13 (11.9%) belonged to the 24-27 age group and 2 (1.8%) belonged to the above 28 age group. 36 (33%) of participants were from Generic Bachelor of Science in Nursing (GBSN) 1<sup>st</sup> year, 28 (25.7%) from GBSN 2<sup>nd</sup> year, 15 (13.8%) from GBSN 3<sup>rd</sup> year and GBSN 4<sup>th</sup> year 30 (27.5%) (Table 1).

**Table 1:** Demographic Characteristics of the Participants

| Demographic Variables     | N (%)       |
|---------------------------|-------------|
| <b>Gender</b>             |             |
| Male                      | 103 (94.5%) |
| Female                    | 06 (5.5%)   |
| <b>Age</b>                |             |
| Below 20                  | 22 (20.2%)  |
| 21-23                     | 72 (66.1%)  |
| 24-27                     | 13 (11%)    |
| Above 28                  | 02 (1.8%)   |
| <b>Academic Level</b>     |             |
| GBSN 1 <sup>st</sup> Year | 36 (33.0%)  |
| GBSN 2 <sup>nd</sup> Year | 28 (25.7%)  |
| GBSN 3 <sup>rd</sup> Year | 15 (13.8%)  |
| GBSN 4 <sup>th</sup> Year | 30 (27.5%)  |

41 participants (37.61%) accepted that the insufficiency of electricity in college was the major cause of absenteeism. Health issues were the second-high occurrence origin of unavailability in 35 (32.11%) participants; moreover, fewer transport resources to college were considered the third



highest reason for absenteeism in 34 (31.19%) participants (Table 2).

**Table 2:** Factors Causing Absenteeism among study participants

| Factors                         | Responses       |                  |             |                     |                    |
|---------------------------------|-----------------|------------------|-------------|---------------------|--------------------|
|                                 | Strongly Agreed | Partially Agreed | Neutral     | Partially Disagreed | Strongly Disagreed |
| Health Issues                   | 35              | 23               | 19          | 09                  | 23                 |
| Long Commute                    | 25              | 20               | 23          | 13                  | 28                 |
| Shortage of Electricity         | 41              | 13               | 18          | 11                  | 26                 |
| Lack of Resources for Transport | 34              | 17               | 13          | 20                  | 25                 |
| Lack of Interest in Studies     | 14              | 09               | 14          | 15                  | 57                 |
| Non-Payment of School Fees      | 20              | 15               | 12          | 09                  | 53                 |
| Total Frequencies               | 169 (25.84%)    | 97 (14.83%)      | 99 (14.83%) | 77 (11.77%)         | 212 (32.41%)       |

## DISCUSSION

Absenteeism is a significant problem within nursing educational systems, and it's adversely impacting student's capability to acquire and retain the necessary knowledge and abilities. Furthermore, the findings aligned with another study conducted in Nigeria by Chukwu et al., which found that the majority of respondents (73.3%) were between 21-25 ages [14]. In the present study, 36 (33%) of the participants were from GBSN 1st year, 28 (25.7%) from GBSN 2nd year, 15 (13.8%) from GBSN 3rd year and GBSN 4th year having 30 (27.5%). The result aligns with a previous study done in Multan found that 40 (31%) of participants were 1st-year students of BSN generic, 30 (23%) were 2nd-year students, 30 (23%) were 3rd-year students and 4th-year students were 30 (23%) [15]. Moreover, the findings are in contrast with the study conducted in Nigeria, which revealed that maximum respondents (76.7%) had only a secondary certificate, and 17.8% were registered nurses [14]. There are several reasons for the substantial absence rate among nursing college students, such as inadequate levels of funding and other essential resources like transportation, a paucity of faculty, and inadequate possibilities for experiential learning and real-world employment [7-9]. In the current study findings, the major factors that affect absenteeism among undergraduate nursing students are shortage of electricity in college (37.61%), health issues 35 (32.11%) and lack of resources for transport to college 34 (31.19%). The result is consistent with a previous, the major factor affecting absenteeism among undergraduate nursing students is lack of transportation 40% [16]. In addition, the study result is also supported by another study which shows that 36.6% of absenteeism occurs among students due to inadequate transport facilities [17]. Moreover, various studies have reported similar findings [18, 19] and [20]. Also, the result is in contrast with Masutha, and Masutha et al., study findings

which show social factor is the major cause of absenteeism among nursing students [21, 22].

## CONCLUSIONS

It was concluded that shortage of electricity, transportation facilities, and health issues are the major factors that affect absenteeism among undergraduate nursing students. Absenteeism is a significant issue affecting both private and public nursing institutions. This study focused on highlighting the factors associated with absenteeism and their potential impact on institutional performance. This study will help formulate policymaking and support nursing leadership and administrators in developing strategies to enhance class attendance and improve the overall learning experience.

## Authors Contribution

Conceptualization: AA<sup>1</sup>

Methodology: AA<sup>1</sup>, MA, A, QK, AN

Formal analysis: AA<sup>1</sup>, A

Writing review and editing: AA<sup>1</sup>, FU, SUR, SA, AJ, AA<sup>2</sup>

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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## Original Article



## Association of Perceived Professional Identity with Academic Year Among Undergraduate Nursing Students at a Public Sector College of Nursing in Rawalpindi: A Cross-Sectional Study

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## ABSTRACT

Professional identity is a crucial element in the growth and development of nurses as professionals. The process of professional identity formation begins when students internalize the principles and values of nursing and gain a deeper understanding of their professional roles.

**Objective:** To measure the professional identity of undergraduate nursing students and its association with their academic year. **Methods:** A cross-sectional analytical study was conducted from January to August 2024 at a Public-Sector College of Nursing in Rawalpindi. A total of 226 nursing students were selected using universal sampling. Data were collected using the Professional Identity Five Factors Scale, which includes demographic data and measures the level of professional identity. **Results:** The mean total score of the students' perceived professional identity was  $87.07 \pm 14.129$ , indicating a moderate level of professional identity. No significant differences were observed between academic years ( $p > 0.05$ ). **Conclusions:** It was concluded that this study provides the first comprehensive evaluation of undergraduate nursing students' perceived professional identities in Pakistan, establishing baseline data for this crucial aspect of nursing education. Enhancements to the curriculum, mentorship programs, and opportunities for hands-on learning can support students in further developing their professional identities and better preparing for careers in nursing.

## INTRODUCTION

Professional Identity (PI) refers to the sense of attachment, commitment, and self-concept individuals develop as members of their selected profession [1]. In classic literature in this field, PI is often understood as a dynamic process of individuals positioning themselves in connection to their social environment. It involves a series of practices that shape one's sense of self within one's present or anticipated professional life [2]. Nursing students acquire knowledge and skills throughout their

educational journey, a process that significantly influences the development of their PI. These acquired elements contribute to a distinct transition from being lay individuals to emerging as professional healthcare workers [3]. PI among nursing students plays a vital role in helping them smoothly transition from being a nursing student to becoming qualified. This approach not only strengthens their dedication to the profession but also elevates patient care quality and raises patient satisfaction levels [4]. The



necessity of moving students from feeling like a nurse to acting like a nurse, as well as learning to "be" a nurse through experience, they advocated for nursing to change from an "emphasis on socialization and role play to an emphasis on formation. The nursing educational experience should encourage the development of PI [5, 6]. PI is directly correlated with these factors such as retention of students and their purpose to remain or depart the nursing profession [6]. However, meeting this condition presents substantial obstacles in Pakistan. The 2020-2021 Pakistan Economic Survey reported that Pakistan had 116,659 registered nurses in 2020 for its approximately 200 million populations. The nurse-patient ratio in the general wards of Pakistani hospitals stands at 1:40, whereas the Pakistan Nursing Council suggests a recommended ratio of 3:10 [7]. According to reports, Pakistan's dwindling number of licensed nurses is due to their relocation overseas in quest of higher-paying work opportunities. This trend is linked to factors like workplace challenges, prioritization of career goals, decreased career contentment and present work experiences [8]. PI issues result in challenges in education and healthcare delivery, including a lack of clinical mentoring, and expertise, heavy workloads, and limited inter-professional collaboration [9]. Nursing students' socialization in clinical settings contributes to the development of their PI by teaching them new roles, skills, knowledge, and behaviours. Understanding non-clinical placement determinants improves PI development, stress reduction, satisfaction with work, and emotional resilience in nurses [10]. Being a professional requires having a strong professional identity since it is a key component of successful practice in the field of healthcare and an indication of both professional and personal contentment [11]. Students' professional identities serve as both a vital indicator of their values and a critical window into their aspirations for their professional development. Learning engagement is seen as a predictor of the standard of higher education as well as an assessment metric for students' experiential progress [12]. A study conducted at Port Say General Hospital America found a statistically significant correlation between undergraduate nursing students' age and their PI scores [13]. Similarly, prior research identified strong associations between students' places of birth, academic levels, and PI [14]. Additionally, the study reported a significant correlation (between nursing students' PI and factors such as school level, educational background, and their willingness to pursue a nursing major [15]. A study at the University of Australia explored the development of PI during pre-registration nursing education and its relationship with higher education. It found that elements such as professional socialization, identity, belonging, clinical placements, and the role of

educators significantly influence PI development [16]. Similarly, a study conducted in Iran assessed the PI of 221 nursing students across three nursing and midwifery colleges. The study concluded that the Iranian nursing education system did not adequately support the positive development of students' PI, as reflected in the average scores being lower than expected but still above the minimum threshold [17].

This study aims to measure the PI of undergraduate nursing students and its association with their academic year.

## METHODS

This cross-sectional analytical study was conducted from February to July 2023. An online software was used to collect data from a sample of 226 nursing students enrolled in the 2nd, 3rd, and 4th years of the Generic Bachelor of Science in Nursing (BSN) program. First-year student nurses were excluded since they had not yet begun their clinical rotations, an important part of their nursing education and PI formation. The research was conducted at a public Sector College of Nursing in Rawalpindi, Pakistan. All participants were female nursing students recruited from a single institution. The Professional Identity Five Factor Scale (PIFFS), an adopted questionnaire, was used for data collection. PIFFS is divided into two parts, the first part is to gather demographic characteristics, age, academic qualification (Previous schooling), year of BSN, and region. The second part of PIFFS consisted of 25 questions organized into five factors: Knowledge of professional practice (Items 1-6), Professional experience (Items 7-12), Role model in profession (Items 13-17), Professional self-efficacy (Items 18-23), Affinity to a certain profession (Items 24-25). All items, except one, used a five-point Likert scale, with responses ranging from 1 (Never True) to 5 (Definitely True). The exception was the question, "Do you already know what kind of work or profession you prefer?" which required a Yes or No response. The creators of PIFFS evaluated its psychometric properties, confirming high reliability. Construct validity was supported by robust structural validity, and the hypothesized five-factor model was found to be "extremely stable" [1]. The original instrument's reliability ranged between  $\alpha=0.65$  and 0.85 across the five subscales. The internal consistency and concurrent validity of the PIFFS were verified with a Cronbach's alpha of 0.841 [18]. High perceived PI: Score above 75% (>91 out of 122). Low perceived PI: Score 75% or less (<91 out of 122) [14]. Data collection was conducted in March 2024 using a self-administration method following an introduction to the research topic. Statistical analysis was performed using SPSS version 27.0. Categorical variables were presented as frequencies and percentages, while quantitative variables were expressed as mean and standard deviation (SD). The Kolmogorov-Smirnov test was



used to assess the normal distribution of the data. Since the PI scores did not meet the assumption of normality, the Kruskal-Wallis test was used for inferential statistics to compare the professional identities of nursing students in their 2nd, 3rd, and 4th years. This study received approval from the Institutional Ethical Committee of the National University of Health Sciences Rawalpindi (Reference number: Re: 422-AAA-ERC-AFPGMI). The research adhered to ethical guidelines, following the Declaration of Helsinki, ensuring informed consent, voluntary participation, confidentiality, and the use of collected information solely for research purposes.

## RESULTS

Among the participants, the majority (69.0%,  $n=156$ ) were in the age group of 18 to 21 years, while 31.0% ( $n=70$ ) were aged between 22 and 25 years. The vast majority of participants were intermediate-level student nurses, comprising 94.7% ( $n=214$ ) of the total cohort, while only 5.3% ( $n=12$ ) had other educational qualifications. Regarding academic year distribution, 31.9% ( $n=72$ ) of the participants were second-year students, 36.3% ( $n=82$ ) were third-year students, and 31.9% ( $n=72$ ) were fourth-year students. Additionally, the study found that 67.7% ( $n=153$ ) of the participants were from urban areas, while 32.3% ( $n=73$ ) were from rural areas. This distribution highlights the predominance of urban students in nursing education at the Public Sector College of Nursing in Rawalpindi. Age, previous qualifications, year of BSN, region, and academic year are presented in table 1.

**Table 1:** Demographic Characteristics of the Study Participants

| Demographic Variables         | N (%)       |
|-------------------------------|-------------|
| <b>Age of Respondent</b>      |             |
| 18-21                         | 156 (69.0%) |
| 22-25                         | 70 (31.0%)  |
| <b>Previous Qualification</b> |             |
| Intermediate                  | 214 (94.7%) |
| Baccalaureate                 | 12 (5.3%)   |
| <b>Year of BSN</b>            |             |
| 2 <sup>nd</sup> Year          | 72 (31.9%)  |
| 3 <sup>rd</sup> Year          | 82 (36.3%)  |
| 4 <sup>th</sup> Year          | 72 (31.9%)  |
| <b>Home Residence</b>         |             |
| Urban                         | 153 (67.7%) |
| Rural                         | 73 (32.3%)  |

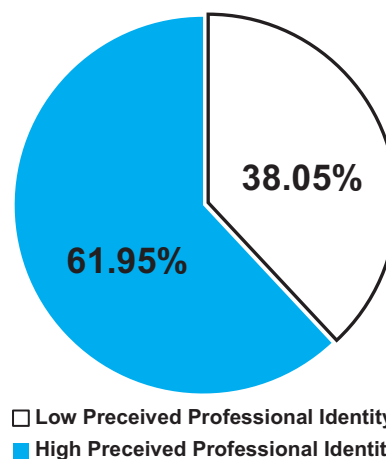
The mean PI score was lowest among second-year students ( $84.74 \pm 14.944$ ), followed by fourth-year students ( $87.71 \pm 14.459$ ), and highest among third-year students ( $88.55 \pm 12.966$ ). A mean PI score of  $87.07 (\pm 14.129)$  was obtained overall. This pattern implies that PI strengthens as students' advance, most likely due to more clinical exposure and real-world experience. To promote consistent PI development, focused support during early education is crucial, as seen by the increased standard

deviation of second-year results. Perceived PI scores among undergraduate nursing students vary over academic years, as seen in table 2.

**Table 2:** Mean Score of Perceived PI among Undergraduate Nursing Students

| Groups      | Number | Minimum PI | Maximum PI | Mean $\pm$ SD      |
|-------------|--------|------------|------------|--------------------|
| Second Year | 72     | 45         | 114        | $84.74 \pm 14.944$ |
| Third Year  | 82     | 41         | 111        | $88.55 \pm 12.966$ |
| Fourth Year | 72     | 46         | 113        | $87.71 \pm 14.459$ |
| Overall     | 226    | 41         | 114        | $87.07 \pm 14.129$ |

38.05% of undergraduate nursing students have high perceived PI, which reflects stronger self-assurance, whereas 61.95% have low PI, which indicates less confidence in their positions. This implies that focused mentoring and clinical experience are required to improve students' PI, as shown in figure 1.



**Figure 1:** Level of Perceived PI Among Undergraduate Nursing Students

The normality of the overall PI score was assessed using the Kolmogorov-Smirnov test. The  $p$ -value  $< 0.05$  represents that the data is not normally distributed. Therefore, the Kruskal-Wallis test, an alternative to ANOVA, was applied, as shown in table 3.

**Table 3:** Test of Normality (Kolmogorov Smirnov Test)

| Variables                              | Statistic | df  | Sig.  |
|--|-----------|-----|-------|
| Overall Score of Professional Identity | 0.079     | 226 | 0.002 |

The Kruskal-Wallis test was applied to compare the PI scores among the 2nd-year, 3rd-year, and 4th-year students. The  $p$ -value  $> 0.05$  indicates no statistically significant difference in PI scores across the three groups, as shown in table 4.

**Table 4:** Association of the PI and Academic Years of BSN (2<sup>nd</sup> Year, 3<sup>rd</sup> Year, 4<sup>th</sup> Year)

| Academic Year        | Mean PI Score | n (Sample Size) | Kruskal-Wallis H | P-Value |
|----------------------|---------------|-----------------|------------------|---------|
| 2 <sup>nd</sup> Year | 84.74         | 72              | 2.390            | 0.303   |
| 3 <sup>rd</sup> Year | 88.55         | 82              |                  |         |
| 4 <sup>th</sup> Year | 87.71         | 72              |                  |         |



## DISCUSSION

This study aimed to measure the PI of undergraduate nursing students and identified its association with the academic year of BSN. The results showed that students' overall PI level was moderate and there was no association between the academic year and PI level. The process of developing a PI is not linear; rather, it is marked by phases of advancement, frequently connected to shift or transition, and sporadic periods of regression [19]. Similar trends have been reported in previous studies the PI score among nursing students was also moderate and highlighted that the future job positioning of undergraduate nursing students was not sufficiently clear [20]. Similarly, another study revealed that nursing interns had a moderate PI level (mean score:  $4.02 \pm 0.63$ ) [15]. This moderate score suggests that nursing interns, like the students in this study, may not have fully developed their professional identities. While they demonstrate a basic understanding of their roles and responsibilities, a degree of doubt or insecurity about their professional stance remains also found that PI among students is generally weak, with significant variations influenced by factors such as academic performance, parental educational background, being an only child, and holding student leadership roles [21]. The findings indicated that all group comparisons had  $p$ -values  $> 0.05$ , suggesting statistical insignificance. This research shows that the perceived PI among second-year, third-year, and fourth-year nursing students do not significantly differ from one another. As a result, the nursing students' professional identities remain consistent throughout these academic years. A similar study found that nursing students' PI remained statistically insignificant throughout the semester [6]. A 2024 study in China found a positive link between perceptions of clinical nursing work and PI. Final-year undergraduate nursing students had the highest identity scores, especially those enthusiastic about nursing during the COVID-19 pandemic. Indifferent students had lower scores, followed by those who viewed clinical nursing as too risky ( $F=6.98$ ,  $p<0.05$ ) [20]. Students with more clinical exposure demonstrated a stronger PI, as shown by a significant positive correlation between professional experience and PIFFS scores ( $r=0.693$ ,  $p<0.001$ ). Clinical work in the third and fourth years, particularly experiences lasting over eight months, significantly enhanced PI [22]. Similarly, the findings of [13] contrast slightly with the current study. They found that most nurses in their study were content with their level of self-responsibility, and approximately three-quarters of participants exhibited a strong PI. This shows how students view their professional duties may be influenced by life experience and maturity. Due to their increased practical exposure and deeper absorption in nursing education, third and fourth-year students showed stronger confidence in

their jobs than second-year students, indicating that educational level also had a significant impact on PI.

## CONCLUSIONS

It was concluded that the study examined the level of PI among undergraduate nursing students and found it to be moderate (87.3). However, the academic year of the BSN program did not influence the PI level. To better understand how nursing students form their professional identities, future studies should explore additional factors such as practical experience and mentorship.

## Authors Contribution

Conceptualization: SS

Methodology: SS, MA, SZ, MSUR

Formal analysis: MA, SZ

Writing review and editing: MA, SZ

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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## Original Article



# Association of Job Shift Length with Quality Nursing Care in Tertiary Care Hospitals, Khyber Pakhtunkhwa

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## ABSTRACT

Nurses are the backbone of hospitals, as they spend more time with patient care compared to other health care professionals. Consistently, nurses are doing their duties in various shifts of different lengths. Usually, long shift duty hours are commonly associated with poor-quality nursing care. **Objective:** To assess the association of job shift length with quality nursing care in a tertiary care hospital in Khyber Pakhtunkhwa. **Methods:** An analytical study design was used to find out the association between study variables. The target population was the registered nurses working in public hospitals in Khyber Pakhtunkhwa, Pakistan. A convenient sampling approach was used to collect data from 377 nurses working in tertiary care hospitals in Khyber Pakhtunkhwa via an adapted questionnaire. Data were analyzed through SPSS version 26.0 for the frequency, percentage, and mean for demographic variables, and the association, the Spearman rank correlation test was used. **Results:** The findings show that the majority of the participants were male (56.2%), and more than half were young nurses (54.9%). There was a strong positive relationship between small shift length and quality nursing care and a weak negative in the case of long shifts. However, individual subscales show a positive association between shift duration and quality nursing care. **Conclusions:** It was concluded that there was a mixed association between shift length and quality care. The study suggests that proper documentation and working in medium shifts instead of long shifts can enhance patient safety and quality care.

## INTRODUCTION

Health organizations throughout the world are struggling with issues including a lack of medical professionals and a severe scarcity of nurses globally [1]. According to the International Council of Nurses (ICN), by 2030, more than 13 million nurses will be needed globally to make up for the nursing shortfall [2]. Moreover, nurse turnover has a detrimental effect on a nurse's capacity to meet patient demands and provide high standards of care. Globally, nurses perform their duties in various shifts and different shift lengths have a great influence on nurses as well as on patient care. Shift length refers to the specific duration of time during which an employee or a worker is to be scheduled on duty, performing their job responsibilities. Shift length has an inverse relation with quality nursing

care [3]. Quality nursing care can be defined as competence and personal caring supported by professionalism and delivered with an appropriate demeanor [4]. Quality nursing care was also defined by the American Nursing Association in 2021 as "the degree to which nursing services for healthcare consumers' families, groups, communities, and populations increase the likelihood of desirable outcomes and are consistent with evolving nursing knowledge [5]. According to Donald Berwick, there are six aspects of quality health care including safety, effectiveness, patient-centeredness, timeline, efficiency, and equity [6]. Hospital nurses frequently work unconventional schedules, including shift rotation and extra hours, to offer patient care around the





clock. Nurses have reported feeling less worn out and having more job satisfaction when their hours are shorter and there is more time between them [7]. According to a study conducted in South Korea, they claimed that long-duty shifts have negatively affected the quality of nursing care [3]. Moreover, nurses working more than 50 hours per week have significantly more adverse nurse outcomes than nurses working less than 40 hours respectively. Similarly, another study found that individuals who worked more than 10 hours per day had two-fold depression levels compared to those who worked less than 10 hours [8]. Furthermore, they also added that working at night increased their levels of work dullness and hopelessness by twice. Based on the result of the above-mentioned studies it could be argued that there is strong evidence to support the idea that exhaustion and insufficient sleep may be linked to extended workdays, which may result in loss of focus and a perceived decline in patient satisfaction and care quality. Similarly, another study was conducted on the association of nurses' shift length with patient safety and quality and their results indicated that longer working hours were shown to be negatively correlated with quality and safety [9]. The Pakistani population is rapidly growing and in 2020, it was 220 million, and now according to the 2023 survey, it has expanded to 240 million [10]. Expansion in population leads to a high disease burden because of the poor healthcare status of Pakistan. Pakistan has also made very languid progress in the health sector over the last fifty years, as evidenced by its health indicators [11]. Life expectancy is frequently used as a gauge for a country's healthcare system, and life expectancy in Pakistan is 65 years, putting it behind other South Asian countries in the decent Asian average [12]. Due to the poor healthcare status of Pakistan, the disease ratio increases, which requires a sufficient number of medical staff to deal with. In the hospital, the patient is mainly dependent on nurses, and they are responsible for their care and help the patient in their daily activities to make them independent. The current nurse-patient ratio in Pakistan is 1:10.6, whereas the recommended ratio is 1:4 patients [13]. There is a scarcity of nurses in Pakistan. Hence, because of the populous country, poor health care system, burden of diseases, and increased burnout of nurses have further decreased the quality of nursing care in our country. Moreover, there is limited published literature on the impact of long shifts on nurses on the quality of the care they provide to patients in our country. According to the researcher's best knowledge, no published study was observed that found an association between shift length and quality nursing care in the country.

This study aims to assess the impact of shift length on quality nursing care in one of the provinces in Pakistan.

## METHODS

An analytical study design was employed. This design was useful to assess a phenomenon at a single time point. The target population was the registered nurses working in public hospitals in Khyber Pakhtunkhwa, Pakistan. The hospitals included in the study were Mardan Medical Complex, Mardan; Naseerullah Khan Babar Memorial Hospital, Peshawar, Qazi Hussain Ahmad Medical Complex, Nowshera; and Bacha Khan Medical Complex, Swabi. The data were collected in different shifts, including morning, evening, and night. The informed consent form was signed by all the participants. The study utilized Power Analysis through Raosoft Incorporated for the calculation of the sampling size, which resulted in 375 staff nurses. In the calculation of the sample, the margin of error is 5%, the degree of confidence is 95%, with the response distribution of 50%. Therefore, the final sample was 400 with a 10% attrition rate. A convenient sampling technique was used in which 400 questionnaires were distributed to ensure an adequate number of samples about the targeted sample size. In the final data collection, 377 questionnaires were returned with complete answers, giving a 94.25% response rate. The participants included in our study were registered nurses working in different shifts and nurses with at least six months of experience in any tertiary care hospital. The participants excluded for the study were outpatient clinics, operating rooms, and recovery room nurses because their duties differed from those of inpatient unit nurses. Nurses who were on vacation during the data collection period and staff nurses who work in other hospitals like district headquarters hospitals, tehsil headquarters hospitals, etc. After approval from the college ethical review committee, the target hospital nursing directors were approached to get permission for the study, and after receiving approval from hospital administration the nurses were approached through the nursing supervisor or team leader of the shift and informed consent was taken before data collection. The study purpose, benefits and possible drawbacks were communicated to study participants and after the study explanation the consent form was signed and the participants assured that they voluntarily agreed to participate in the study. Moreover, participants were free to exit the study at any moment, and their participation was entirely voluntary. The data were collected through questionnaires. The tool used in the data collection was the "Varghese and Joseph survey tool" [14]. The permission was taken from the author through e-mail. The tool contains demographic data that have information about age, gender, education, marital status, speciality area, shift duration, and work experience. Section B contains information regarding quality nursing care and has a 45-item scale consisting of 9 subscales measuring Fatigue (5 items), Stress and Burnout (5 items), Job Satisfaction (5



items), Physical Health (5 items), Documentation (5 items), Service Quality (5 items), Patient Safety (5 items), Adverse Events (5 items), and Communication (5 items). The items are rated on a 5-point Likert scale of 1=I strongly agreed, 2=I agree, 3=I am neutral, 4=I disagreed, and 5=I strongly disagreed. Data were analyzed through SPSS version 26.0 utilizing descriptive statistics from demographic data and inferential statistics (Spearman Rank test) to find the association between shift length and quality care.

## RESULTS

The participants of study were mostly (56.2%) male nurses, whereas female participants made up about 43.8% of the participants. Similarly, the majority (55%) of study participants were young nurses whose age was between 26 and 35 years. The ages of nurses 25 years or less were 26.5% of the total participants; from 36-45 were 12.9%; from 46-55 were 3.2% of study participants; and from 56 and above were 2.7% of study participants. Moreover, 63.7% of participants were married and 36.3% were single. Furthermore, there were also participants of different educational backgrounds. The participants who had a diploma in nursing were 247, which made up 65.5% of the total participants. 124 nurses did BSN, which made up 32.9%, and also 6 participants who did MSN, which made up 1.6% of the total participants. As well, participants were working in different wards of the hospital. There were 21.2% of participants working in the medical ward, 13.3% in surgical, 25.7% in ICU, 12.5% in ED, 10.6% in CCU, 7.4% in pediatric, 4.2% in NICU, and 5% working in other wards of the hospitals. Also, the participants had different work experiences in tertiary care hospitals. The nurses who had 1-5 years of experience made up 49.1%, 6-10 years made up 33.2%, 11-15 years made up 10.6%, 16-20 years made up 3.4%, and those having experience of more than 20 years made up 3.7% of the total study participants. Likewise, the nurses were classified according to their shift length. Nurses who work 6-hour shifts were 259, a percentage of 68.7% of the total participants, and nurses who work 12-hour shifts made 31.3% (Table 1).

**Table 1:** Demographic Characteristics of the Participants

| Variables        | Frequency (%) | Mean   |
|------------------|---------------|--------|
| Gender           |               |        |
| Male             | 212 (56.2%)   | 1.4377 |
| Female           | 165 (43.8%)   |        |
| Age              |               |        |
| 25 or Less Years | 100 (26.5%)   | 2.0053 |
| 26-35 Years      | 207 (54.9%)   |        |
| 36-45 Years      | 48 (12.7%)    |        |
| 46-55 Years      | 12 (3.2%)     |        |
| 56 Or More Years | 10 (2.7%)     |        |

| Marital Status             |             |        |
|----------------------------|-------------|--------|
| Married                    | 240 (63.7%) | 1.3634 |
| Single                     | 137 (36.3%) |        |
| Educational Qualification  |             |        |
| Diploma                    | 247 (65.5%) | 1.3607 |
| BSN                        | 124 (32.9%) |        |
| MSN                        | 6 (1.6%)    |        |
| PhD                        | 0 (0%)      |        |
| Years of Experience in TCH |             |        |
| 1-5 Years                  | 185 (49.1%) | 1.7958 |
| 6-10 Years                 | 125 (33.2%) |        |
| 11-15 Years                | 40 (10.6%)  |        |
| 16-20 Years                | 13 (3.4%)   |        |
| >20 Years                  | 14 (3.7%)   |        |
| Specialty of Work          |             |        |
| Medical                    | 80 (21.2%)  | 3.4244 |
| Surgical                   | 50 (13.3%)  |        |
| ICU                        | 97 (25.7%)  |        |
| ED                         | 47 (12.5%)  |        |
| CCU                        | 40 (10.6%)  |        |
| Pediatrics                 | 28 (7.4%)   |        |
| NICU                       | 16 (4.2%)   |        |
| Others                     | 19 (5.0%)   |        |
| Shift Length               |             |        |
| 6-Hours                    | 259 (68.7%) | 1.3130 |
| 12-Hours                   | 118 (31.3%) |        |

BSN=Bachelor of Science in Nursing, ICU=Intense Care Hospital, ED=Emergency Department, CCU=Critical Care Unit=Neonatal Care Unit, TCH=The Clearing House

It clearly described that nurses who worked in 6-hour shifts have a positive association (0.78) with quality care, which means that when nurses work in short and medium shifts quality nursing care is provided effectively. In contrast, nurses who worked in 12 hours shifts had a weak negative association (-0.10) with quality care. An association of shift length with quality care which is measured through 9 subscales was indicated (Table 2).

**Table 2:** Association Between Shift Length and Quality Care

| Shift Length | Pearson Correlation Value (p) |
|--------------|-------------------------------|
| 6 Hours      | 0.78                          |
| 12 Hours     | -0.10                         |

For inferential statistics, we used Spearman rank for correlation. After the analysis, we obtained different data about the nine subscales of questionnaire related to quality nursing care. To accomplish the study's objectives, a correlation was used to ascertain whether a rise in a variable's qualities might result in an increase or reduction in other variables. The respondents' shift lengths were correlated with quality nursing care using correlation to established shift lengths. Nine subscales are fatigue, stress and burnout, job satisfaction, physical health, documentation, service quality, patient safety, adverse events, and communication. The results of the study show



the overall weak positive association (0.14) of shift length with the nine subscales of quality nursing care. However, some subscales show a significant relationship, like physical health (0.022), documentation (0.045), communication (0.026), and patient safety (0.006) subscales. The remaining subscales, like fatigue, stress and burnout, job satisfaction, and service quality, show results that are not statistically significant (Table 3).

**Table 3:** Correlation Coefficient of Individual Subscale

| Subscales              | Correlation Coefficient | p-Value |
|------------------------|-------------------------|---------|
| Fatigue Total          | 0.102                   | 0.048   |
| Stress Burn Out Total  | 0.049                   | 0.339   |
| Job Satisfaction Total | 0.086                   | 0.095   |
| Physical Health Total  | 0.118*                  | 0.022   |
| Documentation Total    | 0.103*                  | 0.045   |
| Service Quality Total  | 0.54                    | 0.300   |
| Patient Safety Total   | 0.142**                 | 0.006   |
| Adverse Event Total    | 0.084                   | 0.103   |
| Communication Total    | 0.115*                  | 0.026   |
| Overall Total          | 0.148                   | -       |

## DISCUSSION

The results of the study show that shift length and quality nursing care are associated, and some subscale associations are significant. Moreover, the majority were young and they did not feel any exhaustion during duty, and their quality care may be maintained. Current study findings were consistent with other international studies [3, 15]. Similarly, in the present study, shift length also affects patient safety and shows highly significant results ( $p=0.006$ ), which means that when shift length increases, patient safety (PS) is difficult to maintain, and these findings were also carried out by other studies [16, 17]. In contrast, the majority of the international literature carried out on shift length and quality care has a negative association, and is inconsistent with current findings [18-20], they reported that nurses working long shifts have significant adverse outcomes in terms of low patient safety and quality care like, increase medication error, decrease efficiency and fail to complete many important nursing care factors. Moreover, working for long hours also reduces enthusiasm and passion for care which leads to job dissatisfaction and increases nurse burnout. In addition, longer shifts are associated with increased care omission and reduced quality care. Although data on nurse-related accidents is scarce, examinations of performance tests show that nurses on twelve-hour simulated shifts tend to make more mistakes when it comes to grammatical reasoning and analyzing medical records. However, the results of the current study are incongruent with the past research, as there was a weak positive association (0.086) of shift length with job satisfaction (JS), and the p-value ( $p=0.095$ ) was greater than 0.05, which means that the

association was not significant. The results of this study were quite different from previous research due to the following reasons: Most (65.5%) of the participants were 3-year nursing diploma holders, and maybe they did not know the importance of research and filled out the questionnaire without proper concentration. Also, the study participants were mostly (70%) young nurses whose age was up to 35 years, so they were most energetic and strong and could manage their shift length to give quality nursing care. Furthermore, the majority (54%) of nurses working in critical areas may have had more workload, due to which they did not fill the questionnaire with full attention. Additionally, 69% of study participants were working 6-hour shifts, and maybe they could easily provide quality nursing care. Due to all these factors, the results of present study were affected and showed a weak positive association, which was opposite to the results of other research.

## CONCLUSIONS

It was concluded that there was a strong positive relationship between 6-hour shift length and quality nursing care, whereas, there was also a weak negative relationship between 12-hour shifts and quality nursing care. Moreover, the overall sub-scales also indicate a weak positive association between shift length and quality of nursing care; however, some areas like patient safety and documentation are negatively associated with quality nursing care. The study recommended that to increase patient safety and properly document nursing care, nurses need to work in short or medium shifts.

## Authors Contribution

Conceptualization: AK<sup>1</sup>,

Methodology: MK, JK, MAS, MY

Formal analysis: MAS, SK

Writing review and editing: AK<sup>2</sup>, JK, TH

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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## Original Article



## Prevalence and Perceptions of Work-Related Musculoskeletal Disorders among Hospital Nurses in Tertiary Care Hospital in Karachi Pakistan; A Cross-Sectional Study

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## ABSTRACT

Work-related musculoskeletal disorders are a matter of worrisome for both staff and employers. The phrase "musculoskeletal disorders" refers to a group of ailments that injure the muscles, tendons, ligaments, nerves, and joints and are frequently accompanied by pain, discomfort, and incapacity. **Objectives:** To evaluate the prevalence of work-related musculoskeletal disorders in nurses and to assess the perception of risk factors which are associated with work-related musculoskeletal disorders in nurses. **Methods:** A cross-sectional research study was conducted at Civil Hospital and Dow University Hospital Karachi. The data were collected from a sample of 336 nurses using non-probability convenience sampling. **Results:** The result of this study showed that the lower back region was the most popular with 29.2% of the respondents experiencing pain, followed by neck and shoulder (21.2% each), upper back (16.6%), wrist (6.6%), knees (2.5%), thumb (1.1%), ankles (1.1%) and hips (0.5%). The musculoskeletal disorders affect both male and female similarly. **Conclusions:** It was concluded that hospital nurses are highly susceptible to work-related musculoskeletal disorders. The lower back is the most commonly affected body part. Factors such as prolonged standing, awkward postures, and the same task over and over again as contributing factors to work-related musculoskeletal disorders.

## INTRODUCTION

The work-related musculoskeletal disorders (WMSDs) are disorders affecting bones, joints, tendons, cartilage, muscles, fascia, spinal discs, and other anatomical structures. Approximately 27 % of all work-related disorders are due to WMSDs [1]. Nurses are the persons who face a significant occupational hazard: work-related musculoskeletal disorders (WMSDs). From lifting patients

to enduring awkward postures, their demanding tasks put nurses at high risk of back pain, neck aches, and other musculoskeletal issues [2]. According to a meta-analysis's findings, nurses had an annual prevalence of WMSDs of 77.2%, which was lower than the findings of already published previous research. A substantial risk of WMSDs exists for nurses because of their work features. There are



so many patient-related emergencies, that nurses have long working hours. Nursing employment is made even more challenging by their frequent long workdays and very high overtime hours. It becomes very complex for nurses to get adequate sleep, which raises the risk of WMSDs. From a psychological view, the majority of nurses work long nights and handle several emergencies, which also puts a great strain on nurse's minds [3]. Ergonomics is the study of people and their working conditions, it is crucial for overcoming musculoskeletal disorders. The ergonomics focused on designing a workspace that is suitable for human anatomy and physiology. According to the research studies the damage from lifting big objects can be reduced by using tools such as ergonomic lifting. The use of ergonomic equipment decreases the physical strain that job processes place on nurses' bodies [4]. Worldwide, work-related musculoskeletal disorders (WMSDs) pose a serious threat to public health [5]. The increased prevalence of musculoskeletal symptoms was positively associated with a high BMI (Body Mass Index) [6]. Nurses who worked in the emergency department were more prone to develop musculoskeletal disorders [7]. The study conducted in the state of Lagos indicates, 95 respondents (70.4%) experienced work-related musculoskeletal diseases at the time and 81 (60%) had them within the past year. Pain in the lower back (35, 43.2%) was the most frequent musculoskeletal problem associated with work. The majority of respondents 125 (92.6%) said that their jobs were both mentally and physically challenging, and nearly fifty percent of them 64 (47.4%) said they had strong work skills [8]. One more study reported that 84.7% of the 569 individuals stated that they had experienced a lot of lower back pain within the last year. The most common body areas to experience discomfort were the neck, the shoulders, and the upper part of the back, followed by the lower part of the back. It was shown that the nurses who utilized mechanical assistance for lifting had low levels of back pain. The more qualified nurses were shown to be noticeably more prone to employ mechanical patient-lifting apparatus in clinical practice [9]. The incidence of musculoskeletal disorders with upper part backache (56%) and pain in the lower back (92%), as well as the negative impacts of work-related stress, is expected to be higher among nurses, as per another study published in Saudi Arabia [10]. Furthermore, the study conducted in Malaysia revealed that the prevalence of neck pain was highest among nurses [11]. The results of the cross-sectional study indicated that musculoskeletal disorders were linked with the early retirement of nurses from their jobs, approximately 12% of nurses retire annually. Musculoskeletal pain is the leading cause of morbidity and disability among nurses [12]. Moreover, the research study in China showed that the frequency of work-related

musculoskeletal disorders was higher in female nursing staff. The nurses who were working in the surgical department had a higher prevalence of musculoskeletal disorders. (58%) of nurses were suffering from neck pain and (35%) of nurses were complaining of back pain [13]. Furthermore, the research study showed that factors such as age, work experience, gender, obesity, and injuries were associated with musculoskeletal disorders among nurses. Age was found to be a major element correlated to musculoskeletal disorders among nurses [14]. Lower cases of job-related musculoskeletal disorders were found in the nurses who did not work long shifts [15]. The physical strain experienced by nurses was due to insufficient support systems within hospitals, increased muscle tension and fatigue were significantly associated with the high levels of stress [16].

This study aims to evaluate the prevalence of Work-related musculoskeletal disorders in nurses and to assess the perception of risk factors which are associated with Work-related musculoskeletal disorders in nurses.

## METHODS

A cross-sectional was conducted in tertiary care hospitals at Dr. Ruth Pfau Civil Hospital and Dow University Hospital Karachi by using a convenience sampling technique. Open Epi 3.0 was used to calculate the sample size using the proportion of 31.6% of the musculoskeletal disorder [5], with a 5% margin of error, and a confidence level of 95%. The study was conducted between November 2023 to March 2024. Inclusion criteria were nurses who gave consent to take part in the study, nurses' aged above 18 years and who had a minimum of one year of full-time bedside experience. Exclusion criteria were nurses with pregnancy and nurses who have undergone recent surgeries or already have musculoskeletal diseases. Study approval was taken from the research committee of DOW University with reference number (DUHS/DIONAM/2023/18-312). The permission for data collection was sought from the Medical Superintendent of DUHS, and Dr. Ruth Pfau Civil Hospital, Karachi with reference number (DUHS/DION & M/MSN2024/241). The validated questionnaire of "prevalence and pattern of Work-related musculoskeletal disorders (WMSDs) among Nurses" was used to collect the data and the Visual Analog Scale to measure the intensity of pain [8, 17]. The data were entered and analyzed through R Language software version 4.2.3. R software is a data analysis software which provides a wide variety of statistical tests and graphical techniques and is very extensible [18]. For the descriptive variables, frequency was calculated. Logistic regression model was used to estimate the relationship between the dependent and independent variables.



## RESULTS

The survey included observations of 336 registered nurses from various departments aged between 21 to 59 years, having work experience ranging from 1.5 years to 22 years, out of which 151 (44.9%) were female and 185 were male (55.1%), 166 (49.4%) were married and 170 (50.6%) were single. Furthermore, among those who experienced pain in the past 12 months, 213 (78.6%) participants reported having treated themselves, 37 (13.7%) sought help from a health professional, 12 (6.3%) did nothing, while 4 (1.5%) participants did not answer this question. Interestingly, when asked about the intensity of pain, 138 (41.1%) participants responded with no pain, 118 (35.1%) responded with mild pain (1-3), 60 (17.9%) responded with moderate pain (4-6) and 20 (6.0%) responded with severe pain (7-10). Lower back region was the most popular with 29.2% of the respondents experiencing pain, followed by neck and shoulder (21.2% each), upper back (16.6%), wrist (6.6%), knees (2.5%), thumb (1.1%), ankles (1.1%) and hips (0.5%). (Table 1).

**Table 1:** Point Prevalence, 12-Month Prevalence, and Parts of the Body Affected by WMDSs

| Variables               | Frequency (%) |
|-------------------------|---------------|
| <b>Point Prevalence</b> |               |
| Yes                     | 271(80.6%)    |

|                                   |             |
|-----------------------------------|-------------|
| No                                | 65 (19.4%)  |
| Total                             | 336 (100%)  |
| <b>12 Months Prevalence</b>       |             |
| Yes                               | 198 (58.9%) |
| No                                | 138 (41.1%) |
| Total                             | 336 (100%)  |
| <b>Parts of the Body Affected</b> |             |
| Ankles                            | 2 (1.1%)    |
| Hips/Thighs                       | 1 (0.5%)    |
| Knees                             | 5 (2.5%)    |
| Lower Back                        | 58 (29.2%)  |
| Neck                              | 42 (21.2%)  |
| Shoulder                          | 42 (21.2%)  |
| Thumb                             | 2 (1.1%)    |
| Upper Back                        | 33 (16.6%)  |
| Wrist/Hand                        | 13 (6.6%)   |

The result showed that 256 (76.2%) participants agreed that physical activity should be avoided as it may cause impairment. The 161 (48%) participants agreed that these problems get better usually within three months, while 217 (64.6%) participants believed that rest is needed to get better (Table 2).

**Table 2:** Participants' Understanding of Causes and Prevention of Pain

| Sr.No. | For Someone with This Problem  | Strongly Disagree | Disagree | Unsure      | Agree       | Strongly Agree |
|--------|--|-------------------|----------|-------------|-------------|----------------|
| 1      | Physical activity should be avoided as it might cause harm.          | 0 (0%)            | 8 (2.4%) | 33 (9.8%)   | 256 (76.2%) | 39 (11.6%)     |
| 2      | These problems usually get better within three months                | 0 (0%)            | 1 (0.3%) | 120 (35.7%) | 161 (48%)   | 54 (16%)       |
| 3      | Rest is needed to get better   | 0 (0%)            | 1 (0.3%) | 56 (16.7%)  | 217 (64.6%) | 62 (18.4%)     |
| 4      | Neglecting problems of this kind can cause permanent health problems | 0 (0%)            | 4 (1.2%) | 35 (10.4%)  | 172 (51.2%) | 125 (37.2%)    |
| 5      | These problems are commonly caused by people's work                  | 0 (0%)            | 1 (0.3%) | 39 (11.6%)  | 133 (39.6%) | 163 (48.5%)    |

Results demonstrate the participants about their perception of the risk factors associated with work-related musculoskeletal disorders, 201 (59.8%) participants agreed that these problems occur from performing a similar task over and over. The 158 (47%) individuals agreed that nurses might develop such disorders by treating an excessive number of patients per day. The 121 (36%) participants believed that pain was caused by the tasks performed in similar positions for extended periods (standing, bending over, sitting, and kneeling) (Table 3).

**Table 3:** Perception of Job Risk Factors That May Contribute to the Development of Work-related Musculoskeletal Disorders

| Sr.No. | Causes of pain  | Strongly Disagree | Disagree | Unsure     | Agree       | Strongly Agree |
|--------|---|-------------------|----------|------------|-------------|----------------|
| 1      | Performing the same task over and over.   | 0 (0%)            | 0 (0%)   | 44 (13.1%) | 201 (59.8%) | 91 (27.1%)     |
| 2      | Treating an excessive number of patients in one day.                                    | 0 (0%)            | 5 (1.5%) | 46 (13.7%) | 158 (47%)   | 127 (37.8%)    |
| 3      | Not enough breaks/pauses in one day   | 0 (0%)            | 1 (0.3%) | 39 (11.6%) | 164 (48.8%) | 132 (39.3%)    |
| 4      | Work in awkward and cramped positions   | 0 (0%)            | 1 (0.3%) | 30 (8.9%)  | 140 (41.7%) | 165 (49.1%)    |
| 5      | Work in the same positions for long periods (standing, bending over, sitting, kneeling) | 0 (0%)            | 2 (0.6%) | 91 (27.1%) | 121 (36%)   | 122 (36.3%)    |



|   |   |        |          |            |             |             |
|---|---|--------|----------|------------|-------------|-------------|
| 6 | Reaching or working away from your body                           | 0 (0%) | 2 (0.6%) | 39 (11.6%) | 195 (58%)   | 100 (29.8%) |
| 7 | Work schedule (Overtime, irregular shifts, length of the workday) | 0 (0%) | 0 (0%)   | 32 (9.6%)  | 162 (48.2%) | 142 (42.2%) |
| 8 | Inadequate training on injury prevention                          | 0 (0%) | 0 (0%)   | 43 (12.8%) | 125 (37.2%) | 168 (50%)   |

For each one-unit increase in age, the log odds of experiencing pain increase by 0.062, holding other variables constant. This coefficient is statistically significant, (OR=1.06, 95 % CI: 1.008–1.124, p-value=0.026), showing that age is likely to have a significant effect on pain experience. Similarly, for each one-unit increase in work experience, the log odds of experiencing pain increase by 0.152, holding other variables constant. This coefficient is statistically significant (OR=1.16, 95% CI: 1.036–1.309, p-value=0.011), indicating that work experience is likely to have a significant effect on pain experience. For each one-unit increase in gender, the log odds of experiencing pain decrease by 0.106, holding other variables constant. This coefficient is statistically insignificant, (OR=0.90, 95 % CI: 0.543–1.491, p-value=0.681). Similarly for each one-unit increase in weight, the log odds of experiencing pain increase by 0.025, holding other variables constant. This coefficient is statistically insignificant, (OR=1.02, 95 % CI: 0.990–1.060, p-value=0.159). Likewise for each one-unit increase in marital status, the log odds of experiencing pain increase by 0.458, holding other variables constant. This coefficient is statistically insignificant, (OR=1.58, 95 % CI: 0.902–2.771, p-value=0.110). Based on the coefficients and their significance levels, age and work experience appear to be significant interpreters of pain experience in the model. Gender, weight and marital status may not have a significant effect on pain experience, based on the current analysis. In real-world settings the relationship between weight and musculoskeletal pain is significant, excess weight can contribute to the development of musculoskeletal, similarly marital status has a potential impact on musculoskeletal disorders. The majority of participants in the sample of the current study were unmarried and had a normal BMI (Body Mass Index), which may be the reason for insignificant results. A Hosmer-Lemeshow test p-value of 0.33 indicates that the logistic regression model is a good fit (Table 4).

**Table 4:** Results of Logistic Regression Model for Pain Experience

| Variables      | Estimates | Odds Ratio | 95% Confidence Interval | p-value |
|----------------|-----------|------------|-------------------------|---------|
| Age            | 0.062     | 1.064      | 1.008 – 1.124           | 0.026   |
| Gender         | -0.106    | 0.900      | 0.543 – 1.491           | 0.681   |
| Weight         | 0.025     | 1.025      | 0.990 – 1.060           | 0.159   |
| Marital Status | 0.458     | 1.581      | 0.902 – 2.771           | 0.110   |
| Experience     | 0.152     | 1.165      | 1.036 – 1.309           | 0.011   |

## DISCUSSION

The main purpose of the study was to evaluate the prevalence and to assess the perception of the risk factors which are related to work-related musculoskeletal disorders in nursing staff. Our study revealed that most of the nurses experienced low back pain (29.2%) followed by neck and shoulder pain (21.2%). Similar results were found in a research study conducted in China, the majority of nursing staff suffered from low back pain (80.5%), followed by neck pain (79.0%) and shoulder pain (70.4%) [19]. Another meta-analysis study also revealed that as far as anatomical regions go the lower back (59.5%), neck (53.0%), and shoulder (46.8%) had the highest rates of WMSDs among nurses [20]. The Korean Working Condition Survey showed that work experience was found to be significantly associated with WMSDs [21]. Moreover, the descriptive study which was conducted in Bangladesh also showed that marital status was positively correlated with low back pain [22]. Gender did not have a significant effect on pain experience, based on the current analysis. In contrast, the research study conducted in Jordan revealed that musculoskeletal disorders remained higher in female nurses and the prevalence of WMSDs was moderately high

in nurses who were above 30 years of age [23, 24]. In this study the most common causes linked to the development of WMSDs were inadequate injury prevention training (50%), working in an awkward or cramped position (49.1%), work schedule (42.2%) and spending extended amounts of time in the same position (36.3%). Similar results were found in the research study conducted in Ethiopia, which also showed that WMSDs are significantly associated with occupational factors such as work schedule, spending extended amounts of time in a similar position and working in an uncomfortable position [25]. The majority of participants in the current study believed that musculoskeletal disorders occur from work schedules (overtime, irregular shifts, and length of work day). Similarly, the results of the meta-analysis also identified the link between working rotation and irregular shifts and WMSDs, the correlation studies also showed that the prevalence of WMSDs was higher in nurses who were working in rotating and irregular shifts [26]. Inadequate training in injury prevention of nurses was considered a major factor in musculoskeletal disorders among nurses. The study conducted in Saudia Arabia concluded that the risk of WMSDs in nurses was reduced by proper training and applying ergonomic principles as a management strategy [27]. Furthermore, factors such as working in awkward & cramped positions and reaching or working away from the body also play a significant role in the development of musculoskeletal disorders. Many systematic literature reviews considered poor work environments, physical obstacles and difficult-to-access equipment as possible sources of WMSDs [28].



## CONCLUSIONS

It was concluded that the lower back is the most commonly affected body part, followed by the neck, shoulders, and upper back. It was found that age and work experience had a significant association with pain. Nurses often identify prolonged standing, awkward postures, and doing the same task over and over again as causative factors to WMSDs. Hospital nurses are highly susceptible to work-related musculoskeletal disorders. Based on this research study, the prevalence of musculoskeletal disorders over time explores changes in perceptions among hospital nurses, providing a more comprehensive understanding of the issue. This study recommended evaluating existing interventions or ergonomic programs for preventing musculoskeletal disorders among hospital nurses within the research study, assessing their effectiveness and impact on nurses' perceptions and well-being.

## Authors Contribution

Conceptualization: FMA, RMH

Methodology: FMA, DAS, AP

Formal analysis: FMA, RMH, DAK

Writing review and editing: FMA, HB, NEMAS

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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## Original Article



## Assessment of the Nurse's Knowledge and Attitude Regarding Pain Management

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### ABSTRACT

Nurses are vital in ensuring effective pain management within the healthcare team, necessitating a profound grasp of pain and a heightened sensitivity in their caregiving approach.

**Objectives:** To evaluate the knowledge and attitudes of nurses toward pain management.

**Methods:** The cross-sectional design was conducted in two private and public sectors in central Karachi from November, 2023 to February 2024 using a purposive sampling technique among 90 participants. **Results:** The study reveals that 62.8% of participants were aged 24-30, 30% identified as male, 61.1% were post-registered nurse educated, and 73.3% had 1-5 years of experience. Participant knowledge varied, with 34.4% agreeing on giving narcotics regularly, and attitudes showed diverse perspectives, such as 27.8% strongly agreeing that the absence of pain expression does not indicate the lack of pain. **Conclusions:** It was concluded that the study highlights significant deficiencies in nurses' knowledge and attitudes regarding pain management, necessitating urgent, evidence-based educational interventions for a more compassionate approach to nursing care.

### INTRODUCTION

Nurses play a crucial role in effective pain management as an essential component of the healthcare team, requiring a deep understanding of pain and a high level of sensitivity in their care approach [1]. Pain, as defined by the International Association for the Study of Pain (IASP) and the American Pain Society (APS), is an unpleasant sensory and emotional experience linked to actual or potential tissue damage, with individuals' varied experiences shaped by factors like culture, beliefs, coping mechanisms, and past encounters with pain [2]. Pain, a nursing-sensitive indicator, is commonly insufficiently addressed in hospital

and outpatient sectors, emphasizing the potential for enhanced patient outcomes through improved nurse knowledge and attitudes regarding pain management [3]. Nursing professionals caring for older individuals must possess the knowledge and skills necessary for thorough pain management [4]. As nursing educators, nursing students must be comprehensively prepared with proficiency in effective pain management strategies before their professional entry into the field [5]. Nurses, who spend a significant amount of time with patients, are crucial in assisting them in determining the optimal



approach for pain management [6]. Inadequate understanding and negative attitudes toward the care component among nurses have been noted as major obstacles to attaining successful pain management [7]. Inadequate pain management and the presence of pain are linked to worsening pre-existing medical conditions, functional impairment, falls, depression, decreased appetite, sleep disturbances, social isolation, and a lower quality of life, especially in the elderly [4]. The skills, knowledge, and attitude of nurses who administer pain management dictate the standard of care [8]. In Saudi Arabian hospitals, patients continue to experience unnecessary suffering despite increased knowledge about pain management, negatively affecting their physical, mental, and spiritual well-being, as well as their standard of living [9]. Recognized as a worldwide health issue, pain poses a distressing phenomenon, and research indicates that a notable proportion of hospitalized individuals, ranging from 55% to 78.6%, experience moderate to severe pain [10]. In Saudi Arabia, nursing professionals exhibit a knowledge deficit in pain management, with around 50% reporting insufficient understanding of pain assessment and treatment [7]. Despite various interventions, persistent issues in pain treatment involve nurses as primary implementers of doctors' recommendations and pivotal individuals aware of patients' suffering, highlighting the need to address gaps in understanding pain assessment, patient communication, and patient-provider interactions for improved outcomes [11]. Pain, when inadequately managed, not only increases mortality rates but also causes excessive suffering, diminishes the quality of life, and leads to prolonged hospital stays, impacting individuals, families, and society at large [12]. Enhancing knowledge through education offers a potential solution to the common barrier of insufficient understanding of pain, enabling healthcare professionals to shift attitudes and improve their ability to change clinical practices with more effective instructional approaches [11].

This study aims to explore nurses' attitudes and knowledge regarding pain management.

## METHODS

The current study adopted a descriptive, cross-sectional study design. The present study took place in both private and public sectors in Central Karachi. The present study's target population consisted of registered nurses. The sample size was calculated through Open Epi with a 95% confidence interval with a population of 140 and the calculated sample size was 90. The Inclusion criteria were: All registered nurses with valid Pakistan Nursing Council (PNC) licenses, Both male and female, 18 years and above, and Both diploma and degree holders. The Exclusion criteria were the invitation to participate was extended

only to nurses who work in nursing administration, not in operation theatres. Moreover, purposive sampling was used in the current study to select participants from the study population. The study duration was four months from November, 2023 to February 2024. Once permission to collect data was granted, the participants' consent was taken. Explained the purpose, goals, methods, and importance of the study to the participants. After that, the questionnaire was filled out by the participants. To gather information, permission was obtained from an authorized representative of the study sectors. Subsequently, every participant was invited to sign a form indicating their informed consent. Dedicated to ensuring the privacy and confidentiality of the participants, and there was no obligation for anyone to take part in the process of collecting data. The questionnaire employed in the ongoing study was adapted and adjusted from previous research, with permission obtained from the original authors. It comprises three distinct sections, each designed to investigate various aspects of nurses' demographic characteristics, knowledge, and attitudes related to pain management. On a five-point Likert scale, with 5 representing "strongly agree" and 1 representing "strongly disagree," responses to each of the 23 questions on the scale are recorded. These answers yielded a total mean score that spans from 23 to 115, where a higher number denotes a higher degree of knowledge and more positive attitudes among nurses about pain treatment. On the other hand, a lower score denotes inadequate or unfavorable attitudes and knowledge of nurses toward pain management. The demographic data were analyzed using "SPSS" version 26.0, with frequency and percentage being utilized. For information on knowledge and attitude, frequency and percentage are also employed.

## RESULTS

Out of the 90 participants, 62.8% (n=62) were in the 24-30 age range. In terms of gender, 30% (n=27) identified as male, while 70% (n=63) identified as female. Regarding education, 61.1% (n=55) were post-RN nurses. About experience, 73.3% (n=66) had 1-5 years of experience. The results of demographic variables like age, gender, level of education, and nurse experience are shown in table 1.

**Table 1:** Study Participants' Demographic Characteristics

| Variables                 | Frequency (%) |
|---------------------------|---------------|
| <b>Age</b>                |               |
| 24-30                     | 62 (62.8%)    |
| 31-36                     | 28 (31.1%)    |
| <b>Gender</b>             |               |
| Male                      | 27 (30%)      |
| Female                    | 63 (70%)      |
| <b>Level of Education</b> |               |
| Diploma                   | 25 (27.8%)    |



|                          |            |
|--------------------------|------------|
| BS Nursing               | 9 (10.0%)  |
| Post RN                  | 55 (61.1%) |
| MS Nursing               | 1 (1.1%)   |
| <b>Nurses Experience</b> |            |
| 1-5                      | 66 (73.3%) |
| 6-10                     | 21 (23.3%) |
| 11-15                    | 2 (2.2%)   |
| 16-20                    | 1 (1.1%)   |

35.6% (n=32) of participants agreed that a nurse's understanding of the practice may frequently help determine whether a patient receiving a placebo is experiencing pain. 45.6% (n=41) of participants agreed with the nurse's assessment of distraction techniques, such as how using music or relaxation techniques can lessen the perception of pain. 42.1% (n=37) of participants agreed that the nurse's understanding of how a health professional can estimate a patient's pain is a valid indicator of pain in addition to the patient's self-report. 32.2% (n=29) participants strongly agreed and 33.3% (n=30) participants agreed with the nurse's knowledge that patients with severe chronic pain frequently require higher dosages of pain medication than patients with acute pain. 41.1% (n=37) of the participants felt that the nurse's awareness of the

**Table 2:** Knowledge of Nurses Regarding Pain Management

| Statements  | Strongly Disagree Frequency (%) | Disagree Frequency (%) | Neutral Frequency (%) | Strongly Agree Frequency (%) | Agree Frequency (%) |
|---|---------------------------------|------------------------|-----------------------|------------------------------|---------------------|
| Regular drug administration is better for chronic pain management than "PRN" scheduling.  | 17.8 (16%)                      | 20.0 (18%)             | 10.0 (9%)             | 17.8 (16%)                   | 34.4 (31%)          |
| Giving a patient a placebo can often be an effective way to determine whether the patient is truly experiencing pain.                               | 12.2 (11%)                      | 22.2 (20%)             | 11.1 (10%)            | 18.9 (17%)                   | 35.6 (32%)          |
| Pain perception can be reduced by distraction, such as listening to music or practicing relaxation.   | 13.3 (12%)                      | 15.6 (14%)             | 13.3 (12%)            | 12.2 (11%)                   | 45.6 (41%)          |
| As reliable as a patient's self-report of pain is a health professional's estimation of that pain.  | 5.6 (5%)                        | 23.3 (21%)             | 20.0 (18%)            | 10.0 (9%)                    | 41.1 (37%)          |
| Higher dosages of painkillers are frequently required for patients with severe chronic pain than for those with acute pain                          | 11.1 (10%)                      | 11.1 (10%)             | 12.2 (11%)            | 32.2 (29%)                   | 33.3 (30%)          |
| The patient is showing signs of narcotic addiction when their need for analgesics increases.  | 5.6 (5%)                        | 15.6 (14%)             | 17.8 (16%)            | 20.0 (18%)                   | 41.1 (37%)          |
| A patient should receive a reduced dosage of an analgesic if they or a member of their family reports that the opioid is making them feel euphoric. | 5.6 (5%)                        | 11.1 (10%)             | 22.2 (20%)            | 34.4 (31%)                   | 26.7 (24%)          |
| Patients who are given opioids continuously have a 25% chance of developing an addiction.   | 10.0 (9%)                       | 16.7 (15%)             | 11.1 (10%)            | 17.8 (16%)                   | 44.4 (40%)          |
| Injection (IM) is the recommended method for giving narcotic painkillers to individuals experiencing discomfort.                                    | 25.6 (23%)                      | 15.6 (14%)             | 17.8 (16%)            | 12.2 (11%)                   | 28.9 (26%)          |
| Pain-free conditions can be maintained for patients   | 3.3 (3%)                        | 6.7 (6%)               | 14.4 (13%)            | 45.6 (41%)                   | 30.0 (27%)          |
| Patients with chronic pain should take their pain medicine regularly, even if they are not experiencing any discomfort                              | 24.4 (22%)                      | 17.8 (16%)             | 16.7 (15%)            | 13.3 (12%)                   | 27.8 (25%)          |

patient's growing need for analgesics is an indication that the patient is addicted to the drug. Regarding a nurse's knowledge, 34.4% of participants strongly agreed, and 26.7% agreed that if a patient and their family report euphoria from a narcotic, the nurse should administer a lower dose of the analgesic. The knowledge that approximately one-fourth of patients receiving continuous narcotics become addicted, 44.4% of participants agreed. On the topic of the preferred route of administration for narcotic pain relievers (IM), 25.6% strongly disagreed, and 28.9% agreed. Furthermore, 45.6% strongly agreed, and 30% agreed that a nurse's knowledge can maintain patients in a pain-free state. Regarding the belief that patients with chronic pain should receive pain medication regularly, regardless of discomfort, 24.4% strongly disagreed, and 27.8% agreed. Lastly, 32.2% strongly agreed, and 44.4% agreed that staff can consistently pick up cues from patients indicating they are in pain. The result of knowledge for ongoing pain management, a "PRN" schedule is not as optimal as a nurse's regular knowledge of administering narcotics 34.4% (n=31) of participants agreed are shown in Table 2.



|   |          |          |            |            |            |
|---|----------|----------|------------|------------|------------|
| When a patient exhibits signs of pain, staff can always recognize them. | 4.4 (4%) | 7.8 (7%) | 11.1 (10%) | 32.2 (29%) | 44.4 (40%) |
|---|----------|----------|------------|------------|------------|

Strong agreement, at 27.8% (n=25), was observed regarding the belief that the absence of pain expression doesn't necessarily indicate the absence of pain. Additionally, 30% (n=27) agreed that administering narcotics on a regular schedule is preferable for sustained pain management compared to a PRN schedule. Concerning patients requesting increased analgesics, 34.4% (n=31) strongly agreed, and 31.1% (n=28) agreed that this often suggests psychological dependence. Regarding the belief that patients should experience discomfort before the next dose of pain medication, 32.2% (n=29) agreed. Lastly, regarding the attitude that patients receiving narcotics on a PRN basis may develop clock-watching behaviours, 47.8% (n=43) of participants agreed. Nurses' attitudes toward the patient as the most accurate judge of pain intensity garnered agreement from 48.9% (n=44) of participants. Regarding patients on PRN analgesics requesting medication before pain recurrence, 30% (n=27) strongly disagreed, while 35.6% (n=32) agreed. Regarding the notion that children crying may signal a need for diversional activities rather than pain medications, 41.1% (n=37) of participants agreed. Concerning the appropriate dose of morphine for pain control without a maximum limit, 28.9% (n=26) strongly disagreed, and 32.2% (n=29) agreed. Regarding effective pain treatment, involving continuous pain and therapy assessment, 34.4% (n=31) strongly agreed, and 37.8% (n=34) agreed. Lastly, the belief that patients have the right to expect total pain relief as a result of treatment received strong agreement from 38.9% (n=35) and agreement from 34.4% (n=31) of participants. The outlines of the attitudes of nurses toward pain management are shown in Table 3.

**Table3:** Attitudes of Nurses Toward Pain Management

| Statements  | Strongly Disagree Frequency (%) | Disagree Frequency (%) | Neutral Frequency (%) | Strongly Agree Frequency (%) | Agree Frequency (%) |
|---|---------------------------------|------------------------|-----------------------|------------------------------|---------------------|
| It is not a sign of absence of pain to not express it.  | 21.1 (19%)                      | 23.3 (21%)             | 6.7 (6%)              | 27.8 (25%)                   | 21.1 (19%)          |
| For ongoing pain, a regular schedule of drug administration is preferable to a PRN schedule.  | 15.6 (14%)                      | 20.0 (18%)             | 22.2 (20%)            | 12.2 (11%)                   | 30.0 (27%)          |
| A patient is typically psychologically dependent when they need more and more analgesics to manage their pain.  | 6.7 (6%)                        | 16.7 (15%)             | 11.1 (10%)            | 34.4 (31%)                   | 31.1 (28%)          |
| Before administering the subsequent dose of painkillers, the patient ought to be in pain  | 18.9 (17%)                      | 15.6 (14%)             | 22.2 (20%)            | 11.1 (10%)                   | 32.2 (29%)          |
| Clock-watching behaviours may develop in patients who are given opioids on a PRN basis.   | 8.9 (8%)                        | 17.8 (16%)             | 18.9 (17%)            | 6.7 (6%)                     | 47.8 (43%)          |
| The patient is the best judge of how much pain they are experiencing.   | 5.6 (5%)                        | 13.3 (12%)             | 13.3 (12%)            | 18.9 (17%)                   | 48.9 (44%)          |
| When analgesic medication is being administered on a PRN basis, it is appropriate for a patient to request pain medication before their pain returns. | 30.0 (27%)                      | 12.2 (11%)             | 16.7 (15%)            | 5.6 (5%)                     | 35.6 (32%)          |
| When a child cries all the time, distraction exercises are recommended instead of taking real painkillers.  | 8.9 (8%)                        | 8.9 (8%)               | 17.8 (16%)            | 23.3 (21%)                   | 41.1 (37%)          |
| It is essential to regularly evaluate the level of pain and the effectiveness of therapy to treat pain effectively.                                   | 1.1 (1%)                        | 18.9 (17%)             | 7.8 (7%)              | 34.4 (31%)                   | 37.8 (34%)          |
| The patient has the right to anticipate that receiving treatment will result in complete pain relief.   | 8.9 (8%)                        | 8.9 (8%)               | 8.9 (8%)              | 38.9 (35%)                   | 34.4 (31%)          |

The cut-off value indicates that the mean score is 75 + 11.34, with 115 being higher and 23 being lower. This demonstrates the inadequate understanding and unsatisfactory attitude of nurses toward the management of pain. The global knowledge and attitude scores are displayed in Table 4.

**Table 4:** Descriptive statistics of nurses Knowledge and Pain Management

| Descriptive Statistics | n  | Minimum | Maximum | Mean + SD  |
|------------------------|----|---------|---------|------------|
| Age                    | 90 | 46      | 102     | 75 ± 11.34 |

## DISCUSSION

There is a general acknowledgement that the knowledge significantly influences the efficiency of pain control during treatment, and the attitudes of the healthcare team, with a particular emphasis on nurses. In the current study, the total number of participants was 90. 62% of the



participant's age were between 24-30 years, and 70% of participants were females. In contrast, in another study total number of participants was 183. the average age of the participants was 31 years, and 68% of them were 31 years old or younger. The majority of the participants, 94.5%, were female. In the present study, 70% of participants' professional experience was from one year to five years. In contrast, another study conducted in Gambia revealed a range of professional work experience varying from 1 to 26 years. The current study's findings demonstrate nurses' poor attitudes and insufficient knowledge of pain management.  $75 \pm 11.34$  is the study's mean score. In a similar vein, data from another study indicates that 60.9% of nurses had negative attitudes and insufficient knowledge of pain management. Alternatively, a different study carried out in Ireland in 2023 found that low levels of positive attitude (25.76%, 95% CI: 11.01 to 44.12) and less than half (45.9%, 95% CI: 20.46 to 71.97) of participants had sufficient or higher levels of knowledge regarding pain management. A moderate pain knowledge score of  $10.75 \pm 2.11$  and a pain attitude score of  $12.65 \pm 2.33$  were found in another study conducted in Turkey. The results of the current study indicated that nurses' understanding of pain management is lacking. On the other hand, an investigation carried out in China found that the average mean percentage score on the KASRP instrument was 40.3%, which is significantly lower than the 80% mark that denotes a sufficient understanding of pain management. Another study found that 60.9% of nurses lacked adequate knowledge about managing pain. According to the results of the current study, the majority of participants believe that giving a patient a placebo can frequently help determine whether or not he is truly experiencing pain. In a similar vein, a different study carried out in Turkey found that most participants thought that giving sterile saline or water (i.e., a placebo) was an efficient way to determine whether or not patients' complaints of pain were genuine. The majority of study participants say that for ongoing pain, a regular schedule for administering narcotics is preferable to a PRN schedule. Another study, however, revealed that most participants do not agree that the PRN schedule is better than a regular schedule for administering narcotics to treat ongoing pain. In the current study, the majority of participants (48.9%) concurred that the patient is the best arbiter of their level of pain. Similarly, in another study, the majority of participants (69.6%) agreed that the patient is the best person to determine how much pain they are experiencing. According to the results of the current study, the majority of participants (42.2%) felt that the best dose of morphine for a patient experiencing pain is the one that best manages their symptoms. Similarly, a different study found that 73% of nurses were aware that morphine was the most effective medication for managing pain. In

this regard to address these challenges, healthcare institutions must prioritize pain management education for nurses.

## CONCLUSIONS

It was concluded that the research identifies a notable deficiency in nurses' knowledge and attitudes towards management. Issues include a lack of understanding about narcotics administration, a preference for PRN schedules, and misconceptions about euphoria and analgesic doses. Attitudes such as patient endurance and concerns about clock-watching indicate a need for a shift towards patient-centric and evidence-based approaches. The overall low mean score underscores the urgency for targeted educational interventions to address these shortcomings and promote compassionate, evidence-based pain care in nursing.

## Authors Contribution

Conceptualization: YK, SF

Methodology: HN, MY, S, A, MHS

Formal analysis: AB, RA

Writing review and editing: MY, S, A, SH, MHS

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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## Original Article



## Academic Engagement in Undergraduate Nursing Students in Swat

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## ABSTRACT

One of the most important factors affecting students' learning outcomes, overall growth, and academic achievement is academic engagement. Engagement is particularly important in nursing education because it has a direct impact on the development of critical thinking, clinical decision-making, and patient care abilities. **Objective:** To measure the level of academic engagement among nursing students in Swat. **Methods:** A cross-sectional study methodology was utilized, encompassing 218 nursing students from five private nursing colleges in Swat. Students enrolled in the 4th, 5th, and 8th semesters were selected using a convenience sampling technique. Data were collected using the Academic Engagement Scale, which consists of 14 items covering three subscales: vigor, dedication, and absorption. The scale uses a seven-point rating system, with scores ranging from 1 (never) to 7 (always). Data analysis was performed using SPSS version 26.0, including descriptive statistics and frequency tables. **Results:** The research indicated that 89.4% of participants were male, and 89% of the students were aged 20 to 24 years. The average academic engagement score was 70.57 out of 98, indicating a relatively high level of engagement among the students. **Conclusions:** It was concluded that nursing students in Swat display a considerable degree of academic engagement, achieving an average score of 70.57 out of 98. This indicates active involvement in academic activities, which is crucial for the development of key skills necessary for nursing practice.

## INTRODUCTION

Student engagement investigates the interest, passion, focus, and active participation demonstrated by students during the learning process. It shows the depth of students' cognitive, emotional, and behavioural engagement in the learning process [1, 2]. One perspective stresses students following the rules, another emphasizes their emotional commitment to learning and active involvement, which is the main focus here. Decisions about the distribution of resources, the content of courses, and their delivery can be influenced by an understanding of engagement and disengagement in postsecondary institutions, which is essential for evaluating student performance, advancement, and retention [3]. Additionally, three components of behavioural, emotional, and cognitive

engagement are thought to be combined to form the flexible, multifaceted concept of student engagement [4]. Moreover, student intellectual engagement is a requirement for L2 learning, according to research. Disengagement is linked to school dropout, but academic engagement is linked to students' increased academic accomplishment. Along with this, according to self-determination theory (SDT), fostering student engagement in a blended learning environment differs greatly from that in a typical classroom setting [5]. This is achieved by meeting three basic needs: competence, relatedness, and autonomy. To meet the needs of the three learners, related studies have focused on teacher help rather than digital support [6]. Furthermore, it claims that an essential



component of effective learning is student engagement [7]. Engaging student's entails more general conduct, such as showing up to class and taking part in extracurricular activities [8]. In addition, research indicates that a crucial precondition for optimal and profound learning is student engagement. Additionally, motivated pupils have better long-term employment opportunities [9]. In addition, daily interactions are imperative to foster student engagement, given its importance for both present and future achievement. However, maintaining classroom discipline and teaching a subject while simultaneously getting pupils interested in the material is, to put it bluntly, a challenging and demanding task [10]. Newer interactive teaching approaches are being investigated by nurse educators to increase pupil engagement, learning levels, and academic self-concept. By offering a variety of engaging learning activities and venues that today's students prefer, nursing educators can create this possibility [11, 12]. For nursing students, this is particularly vital since their education directly affects patient care. Factors that influence engagement, nursing schools can design interventions to improve academic success, reduce dropout rates, and increase graduation rates.

This study aims to measure the level of academic engagement in nursing students in Swat.

## METHODS

This cross-sectional study design was used in 5 different nursing colleges in Swat. The study population includes Nursing students currently enrolled in the 4th 5th and 8th semesters. The study was conducted in 3 months from September 2024 to November 2024. A convenient sampling technique was used. Moreover, the sample size was calculated through Open EPI version 3 with a 95% confidence interval. The inclusion criteria were students currently enrolled above the 4th Semester in a private nursing college in Swat who volunteered to take in the research. Additionally, students must have a minimum attendance rate of 75% in their classes and clinical placements. The exclusion criteria were students who were unable to provide informed consent due to medical or psychological conditions. As well as those who have not completed at least four semesters in the nursing program. First, we obtained permission from the principal of the Night Angle Institute of Nursing and Health Sciences with reference number (NINHSA/Admin/300-10/24). We then sought consent from the selected nursing colleges in Swat before distributing the questionnaires and collecting the data. SPSS version 26.0 was used to analyze the data. An academic engagement measure with 14 items was employed in this study. This scale consists of three subscales: vigor (VI), devotion (DE), and absorption (AB). A seven-point frequency rating system was used to provide a score to each item, where 1 denotes never and 7 denotes

always [13]. The tool's overall score was 98. This tool's reliability is 0.90. Additionally, 10% of the entire sample size was used for pretesting this tool. The Cronbach alpha value that was computed was 0.95.

## RESULTS

The table provides a summary of the demographic characteristics of the study participants. Out of a total of 218 participants, 195 (89.4%) were male and 23 (10.6%) were female, indicating a predominantly male sample. In terms of age, the majority of participants, 194 (89%), were aged 20-24 years, while 24 (11%) were aged 25-29 years. The participants were distributed across various academic semesters, with the highest representation from the 5th semester (103, 47.2%), followed by the 4th semester (61, 28%), 8th semester (30, 13.8%), 6th semester (18, 8.3%), and 7th semester (6, 2.8%). Regarding marital status, most participants were unmarried or single (192, 88.1%), while 22 (10.1%) were married, and 4 (1.8%) were divorced (Table 1).

**Table 1:** Demographic Characteristics of Study Participants (n=218)

| Variables      | Category         | Frequency (%) |
|----------------|------------------|---------------|
| Gender         | Male             | 195 (89.4%)   |
|                | Female           | 23 (10.6%)    |
| Age            | 20-24 Years      | 194 (89%)     |
|                | 25-29 Years      | 24 (11%)      |
| Semester       | 4th Semester     | 61 (28%)      |
|                | 5th Semester     | 103 (47.2%)   |
|                | 6th Semester     | 18 (8.3%)     |
|                | 7th Semester     | 6 (2.8%)      |
|                | 8th Semester     | 30 (13.8%)    |
| Marital Status | Unmarried/Single | 192 (88.1%)   |
|                | Married          | 22 (10.1%)    |
|                | Divorced         | 4 (1.8%)      |

Students scored an average of 70.57 out of 98. This suggests a relatively high level of engagement, as 70.57 is a significant portion of 98 (Table 2).

**Table 2:** Descriptive Statistics of Key Variable

| Variable            | Mean + SD     | Total Score |
|---------------------|---------------|-------------|
| Academic Engagement | 70.57 + 13.75 | 98          |

## DISCUSSION

Students' learning experiences, academic achievement, and future professional competence are all significantly influenced by their level of academic engagement [14]. Engagement is particularly important in nursing education because it has a direct impact on the development of critical thinking, clinical decision-making, and patient care, among other crucial skills [15]. The purpose of this study is to degrees of academic engagement among Swat's undergraduate nursing students. The current findings show that the majority of the participants (89.4%) were



male. In contrast, another study found 71% of the students were female [16]. The current findings show scored an average of 70.57 out of 98. This suggests a relatively high level of engagement. In this regard, another study found the mean score of 55.69 suggests moderate engagement [5]. Additionally, another study found that (45%) were found to be extremely engaged [17]. Moreover, another study found the degree of engagement was moderate overall. Also, this study concluded that academic attainment was significantly impacted by student motivation, facilitating settings (such as engagement-fostering elements), and student engagement. The results of this study are intended to serve as quality indicators that guide educational institutions in their pursuit of nursing education excellence [18]. Furthermore, a study found that nursing students outperformed students in other professions (mean=55.22 or 56.14) in several areas of intellectual engagement, with a mean score of 58.71 [19]. In this regard, another study found that participating in class, turning in required essays, and paying attention to the teacher's advice are all indicators of academic engagement. Because they can both be causes or effects of one another, burnout and engagement are ideas that are adversely connected [16]. In addition to this, another study recommended that teaching formulas that will engage and promote learning for Generation Z students may include creative lectures that integrate relevant visual visuals, audience involvement, simulation, films, and case studies [20]. Students are more likely to attain greater learning outcomes when they are actively involved in the process, enjoy what they are doing, and derive practical value from it [21]. Prior research has demonstrated that raising students' levels of academic engagement may improve their desired academic achievement and performance [3].

## CONCLUSIONS

It was concluded that with an average academic engagement score of 70.57 out of 98, the results demonstrate that students are generally well-engaged in their studies. This number indicates that, on average, students are actively engaged in their academic work because it makes up a sizable amount of the possible score.

## Authors Contribution

Conceptualization: MA, AB

Methodology: AA, ZA, FA, AH, F, BS

Formal analysis: AA, SK, AI

Writing review and editing: ZA, FA, AH, BS

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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## Original Article



## Quantifying the Influence of Social Media on Desensitization and Empathy among Undergraduate Nursing Students: A Cross-sectional Study in Mardan Khyber Pakhtunkhwa

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## ABSTRACT

The widespread use of social media among nursing students has higher concerns about its impact on emotional well-being and vital professional capabilities, such as desensitization and empathy level. These points are critical in nurturing of current patient care quality and sustaining compassionate nursing practice. **Objectives:** To investigate the relationship between social media usage and levels of desensitization and empathy among undergraduate nursing students in Mardan, Khyber Pakhtunkhwa Pakistan. The research pursues to find a shapes of social media consumption that may support to emotional disinterest and reduced empathetic interactions. **Methods:** A quantitative cross-sectional study was conducted in Mardan KPK Pakistan using convenience sampling of 150 nursing students. The duration of this study was 4 months. Data were collected through a modified questionnaire assessing social media usage, empathy, and desensitization. Statistical analyses evaluated the correlations between these variables. **Results:** The findings revealed a significant positive correlation between high social media usage and increased desensitization, coupled with a notable decline in empathy levels. Students exposed to negative or distressing content on social media showed more noticeable reductions in empathetic responses. The results highlight the potential for social media to influence emotional engagement and sensitivity in professional settings. **Conclusions:** The study underscored the need for educational interventions within nursing programs to alleviate the belongings of unnecessary need for social media use. Participating in training on emotional intelligence and responsible social media consumption could improve empathy and reduce desensitization, eventually improving the quality of patient care brought by future nurses.

## INTRODUCTION

Social media has revolutionized communication, allowing users to share and interact with content instantly. With 4.2 billion active users globally, it is a vital part of modern life, as outlined in the "Digital 2021: Global Overview Report" [1, 2]. For nursing students, especially in Mardan, Khyber Pakhtunkhwa, social media offers both opportunities and challenges. While it can enhance learning through study groups, information sharing, and research facilitation, excessive use poses risks like disrupted sleep, reduced attention, and increased anxiety, all of which can hinder academic and clinical performance [3, 4]. Empathy is a critical skill for nursing students, integral to patient care. It involves the ability to understand and respond to the

emotions of others, fostering compassionate interactions [5, 6]. While social media can expose students to diverse perspectives that enhance empathy, exposure to negative or violent content can reduce their empathetic responses. This diminished emotional engagement can adversely affect their ability to connect with patients in clinical settings [7]. Desensitization, which involves a decreased emotional response to shocking material due to repeated exposure, is a growing concern among nursing students [8, 9]. Regular exposure to distressing content on social media can lead to emotional numbness, undermining the sensitivity required in nursing practice [10]. The COVID-19 pandemic has exacerbated this issue, as constant



exposure to distressing news has been shown to reduce emotional reactions over time [11, 12]. Understanding the impact of social media on empathy and desensitization among nursing students in Mardan is crucial. This research aims to explore these effects and suggest educational interventions to promote responsible social media use. By fostering emotional intelligence and mitigating desensitization, nursing programs can help ensure that future nurses maintain the empathy essential for high-quality patient care.

## METHODS

A quantitative cross-sectional study was conducted to assess the impact of social media on desensitization and empathy among 4th-year nursing students in Mardan, Khyber Pakhtunkhwa. The study was conducted for three months, starting in September, and included participant recruitment, data collection, and analysis. Using convenience sampling, the study involved 150 students from five nursing colleges: MTI College of Nursing, Mardan College of Nursing, Sarhad Institute of Health Sciences, Institute of Health Sciences Mardan, and Elizabeth Rani College of Nursing Sciences. The sample size was calculated using RaoSoft software with a 6% margin of error and a 94% confidence interval. Only 4th-year students were included, due to their sufficient exposure to both social media and clinical settings. First, second, and third-year students were excluded. Participants voluntarily provided informed consent. Data were collected through a self-administered questionnaire adapted from validated tools, with a Cronbach's alpha coefficient of 0.744 for reliability. Questionnaire comprised of demographics: information on age, gender, academic year, healthcare experience, social media use, and geographic location. Social Media Impact: Six Likert-scale questions assessed the influence of social media on desensitization and empathy. Empathy and Desensitization: Two parts: five questions on emotional resilience and empathy, and eight on desensitization. Data were analyzed using SPSS version 26.0. Descriptive statistics, including frequencies, percentages, and ranges, were used to summarize responses. Ethical approval was granted by the institutional review boards of the participating universities. Participants were informed about the study and assured of confidentiality. Informed consent was obtained, and responses were used exclusively for research purposes.

## RESULTS

In table 1 out of 150 students, fourth-year nursing students from multiple colleges participated in the study, with the majority 84.7% aged 21-23 years and 64% male. Most participants 64.7% had prior healthcare experience, and TikTok 44.7% was the most preferred social media platform. Additionally, 71.3% used social media multiple

times daily. Analysis revealed no significant differences in empathy or desensitization between male and female participants ( $p = 0.65$ ), suggesting that gender does not significantly impact emotional responses to social media.

**Table 1:** Demographic Characteristics of Participants

| Variables                             | Frequency (%) |
|---------------------------------------|---------------|
| <b>Gender</b>                         |               |
| Male                                  | 96 (64.0%)    |
| Female                                | 54 (36.0%)    |
| <b>Age</b>                            |               |
| 18-20                                 | 2 (1.3%)      |
| 21-23                                 | 127 (84.7%)   |
| 24-26                                 | 21 (14.0%)    |
| <b>Academic Year</b>                  |               |
| Fourth Year                           | 150 (100%)    |
| <b>Previous Healthcare Experience</b> |               |
| Yes                                   | 97 (64.7%)    |
| No                                    | 53 (35.3%)    |
| <b>Geographic Location</b>            |               |
| Mardan                                | 150 (100%)    |
| <b>Preferred Platforms</b>            |               |
| Facebook                              | 51 (34.0%)    |
| Instagram                             | 21 (14.0%)    |
| Twitter                               | 11 (7.3%)     |
| TikTok                                | 67 (44.7%)    |
| <b>Frequency of Social Media Use</b>  |               |
| Several Times a Day                   | 107 (71.3%)   |
| Once a Day                            | 19 (12.7%)    |
| Several Times a Week                  | 18 (12.0%)    |
| Once a Week                           | 6 (4.0%)      |

In table 2 nearly half of participants 48.7% used social media throughout the day, with 19.3% using it about half the time. Emotional content was frequently encountered by 35.3%, and 33.3% reported feeling desensitized about half the time. Empathy was moderate for 36%, with 38.7% indicating social media influenced real-life emotional responses most of the time (Table 2).

**Table 2:** Influence of Social Media on Desensitization and Empathy

| Question                             | Frequency (%) |
|--------------------------------------|---------------|
| <b>Frequency and Duration of Use</b> |               |
| Most of the time                     | 73 (48.7%)    |
| About half the time                  | 29 (19.3%)    |
| <b>Content Exposure</b>              |               |
| Most of the time                     | 58 (38.7%)    |
| About half the time                  | 37 (24.7%)    |
| <b>Emotional Content Perception</b>  |               |
| About half the time                  | 53 (35.3%)    |
| Most of the time                     | 42 (28.0%)    |
| <b>Desensitization Levels</b>        |               |
| About half the time                  | 50 (33.3%)    |
| Most of the time                     | 45 (30.0%)    |



| Empathy Levels                  |            |
|---------------------------------|------------|
| About half the time             | 54 (36.0%) |
| Most of the time                | 49 (32.7%) |
| Influence on Real-Life Emotions |            |
| Most of the time                | 58 (38.7%) |
| Some of the time                | 37 (24.7%) |

responses to social media content, with a high proportion of neutral responses 43.3%, indicating potential emotional detachment or desensitization. A negative correlation ( $-0.45$ ) between desensitization and empathy further suggests that increased desensitization may reduce empathy levels.

In table 3 (Part a) the table showed participants' emotional

**Table 3(Part A):** Frequency, Percentage, and Range of Emotional Responses

| (Part A) Variables   | Strongly Disagree Frequency (%) | Disagree Frequency (%) | Neutral Frequency (%) | Agree Frequency (%) | Strongly Agree Frequency (%) | Range |
|--|---------------------------------|------------------------|-----------------------|---------------------|------------------------------|-------|
| To what extent do you feel desensitized to emotional content on social media?                          | 7 (4.7%)                        | 51 (34.0%)             | 65 (43.3%)            | 18 (12.0%)          | 9 (6.0%)                     | 4     |
| When I see someone being taken advantage of on social media, I feel kind of protective toward him/her. | 8 (5.3%)                        | 27 (18.0%)             | 43 (28.7%)            | 54 (36.0%)          | 12 (8.0%)                    | 4     |
| I get a strong urge to help when I see someone upset on social media.                                  | 14 (9.3%)                       | 34 (22.7%)             | 38 (25.3%)            | 32 (21.3%)          | 18 (21.3%)                   | 4     |
| I find that I am "in tune" with other people's moods on social media.                                  | 12 (8.0%)                       | 47 (31.3%)             | 49 (32.7%)            | 30 (20.0%)          | 12 (8.0%)                    | 4     |
| I can tell when others are sad even when they do not say anything on social media                      | 20 (13.3%)                      | 32 (21.3%)             | 49 (32.7%)            | 34 (23.3%)          | 14 (9.3%)                    | 4     |

In table 3 (part b) the extended data offers insight into participants' reactions to emotional content on social media, with responses ranging from "Strongly Disagree" to "Strongly Agree." It highlights trends in emotional engagement and detachment, providing a clear view of how participants respond to emotional situations online.

**Table 3(Part B):** Frequency, Percentage, and Range of Emotional Responses

| (Part B) Variables   | Strongly Disagree Frequency (%) | Disagree Frequency (%) | Neutral Frequency (%) | Agree Frequency (%) | Strongly Agree Frequency (%) | Range |
|--|---------------------------------|------------------------|-----------------------|---------------------|------------------------------|-------|
| I enjoy making other people feel better on social media  | 6 (4.0%)                        | 17 (11.3%)             | 45 (30.0%)            | 59 (39.3%)          | 23 (15.3%)                   | 4     |
| When a friend starts to talk about his/her problems on social media, I try to steer the conversation elsewhere | 4 (2.7%)                        | 43 (28.7%)             | 44 (29.3%)            | 54 (36.0%)          | 5 (3.3%)                     | 4     |
| I do not feel sympathy for people who cause their serious illnesses on social media                            | 11 (7.3%)                       | 23 (22.0%)             | 46 (30.7%)            | 41 (27.3%)          | 19 (12.7%)                   | 4     |
| I become irritated when someone cries on social media  | 4 (2.7%)                        | 31 (20.7%)             | 40 (26.7%)            | 53 (35.3%)          | 22 (14.7%)                   | 4     |
| I am not interested in how other people feel on social media   | 6 (4.0%)                        | 27 (18.0%)             | 47 (31.3%)            | 47 (31.3%)          | 23 (15.3%)                   | 4     |
| When I see someone treated unfairly on social media, I do not feel very much pity for them                     | 10 (6.7%)                       | 47 (31.3%)             | 36 (24.0%)            | 36 (24.0%)          | 21 (14.0%)                   | 4     |
| I find it silly for people to cry out of happiness on social media   | 6 (4.0%)                        | 28 (18.7%)             | 45 (30.0%)            | 53 (35.3%)          | 18 (12.0%)                   | 4     |
| It upsets me to see someone being treated disrespectfully on social media                                      | 1 (0.7%)                        | 31 (20.7%)             | 38 (25.3%)            | 60 (40.0%)          | 20 (13.3%)                   | 4     |

T-tests showed no significant differences in empathy or desensitization based on prior healthcare experience ( $p = 0.92$ ). A negative correlation ( $-0.45$ ) between desensitization and empathy suggests higher desensitization lowers empathy. ANOVA results ( $p = 0.015$ ) indicated significant differences in emotional responses across groups, emphasizing the influence of social media exposure.

## DISCUSSION

The influence of social media on emotional and psychological states is critical, particularly in empathy-driven fields like nursing. As social media becomes progressively essential to daily life, mainly in the Middle East, there has been a notable rise in cell phone and internet usage [13]. Research indicates that exposure to media violence can lead to aggression and desensitization, fading natural fear responses [10]. While social media is

likely to foster connections and enhance psychological well-being, it can also subsidize negative outcomes such as cyberbullying and unfavourable social comparisons among youth [14]. Thus, focusing on the quality of interactions over their quantity is essential for maintaining mental health [13]. The existing literature explores mostly northern hemisphere and Asian populations' uses of SoMe in nursing and nursing education [15]. Moreover,



concerning the healthcare profession, over 60% of studies indicate that healthcare professionals may face misconduct related to secrecy and confidentiality breaches as a result of their social media use [16]. Educational interventions that address social media policies can effectually reassure students to alter their privacy settings on platforms like Facebook, TikTok, and Instagram [17]. While these changes do not integrally guarantee enhanced professionalism in online posts, they underline the status of comforting students about the potential consequences of their online actions, especially relative to their future roles in nursing. Also, Gurol (2010) found that 48.4% of Turkish health sciences students exploit the Internet for academic determinations, with further research showing that social media can enhance communication and learning in nursing education [18]. However, nursing students often shape the lines of professional boundaries on social media by posting unprofessional content that threatens patient privacy. This situation highlights the tenacious need for improved education on ethical online behavior [15]. While social media is recognized for its value in secondary cognitive development and nurturing collegiality in nursing education, there is still a lack of formal guidance on how to integrate social media use as a nursing skill. As such, nurse educators should create structured opportunities for professional engagement with social media [19]. WhatsApp is the top social media app in clinical settings due to its cost-effectiveness. A Saudi study found that platforms like Twitter, YouTube, and LinkedIn are widely used by healthcare professionals for networking and professional development [20]. To clarify, the discussion highlights that while social media is widely used for professional and educational purposes in nursing, it also presents challenges related to privacy, professionalism, and emotional impacts, such as empathy and desensitization. The findings suggest that nursing students' engagement with social media may affect their emotional responses, particularly empathy, which is crucial in their field. The discussion emphasizes the need for comprehensive education on ethical online behavior and structured use of social media as a professional tool in nursing education. This approach can help mitigate negative outcomes while enhancing students' emotional and professional development.

## CONCLUSIONS

This study explored nursing students' emotional responses to social media, focusing on empathy and desensitization. No significant gender differences were observed, and neutral reactions suggest emotional detachment. Prior healthcare experience had no notable impact. Given the homogeneity of participants in their fourth year, future research should include students from various academic

levels. To help students manage emotional responses, educators should promote emotional intelligence, mindfulness practices, and peer support to mitigate distress and enhance coping strategies. Further investigation with a more diverse sample is needed to deepen these insights.

## Authors Contribution

Conceptualization: S,

Methodology: S, MA<sup>1</sup>, A, MA<sup>2</sup>, DA

Formal analysis: S, SBA

Writing, review and editing: S, M, SBA, A, MA<sup>1</sup>, MA<sup>2</sup>

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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## Systematic Review



## Parental Roles in Early Detection and Long-Term Care of Necrotizing Enterocolitis

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## ABSTRACT

Necrotizing Enterocolitis is a devastating disease of the gastrointestinal tract, where full-thickness necrosis develops through processes that remain uncertain, and with early diagnosis, a patient's prognosis can be improved. However, parents are the primary caregivers of neonates; they may be best positioned to identify early signs of necrotizing enterocolitis, and their involvement is fundamental. **Objectives:** To evaluate the role defined by parents in the early recognition of necrotizing enterocolitis symptoms in the relevant neonates, as well as the potential suggestions from parents on how their involvement could impact early recognition, management, and outcomes of the disease. **Methods:** The literature used in this review paper is selected from PubMed, Scopus, CINAHL, and Google Scholar. The search method included using terms such as "Necrotizing Enterocolitis," "parental involvement," "early detection," "educational programs," and "premature neonates". Studies from qualitative and quantitative were selected and published within five years. A total of 1200 articles were selected, and after removing duplicate studies, 850 articles were sought. Consequently, 50 articles were introduced in the final review. **Results:** The results indicated that parents play an important role in identifying the early signs of Necrotizing Enterocolitis in premature neonates. Research emphasizes educating parents on recognizing these warning signs and encouraging prompt communication with healthcare services. **Conclusions:** It was concluded that the crucial role of parental enlightenment and education about symptoms of Necrotizing Enterocolitis, as well as liaison with the healthcare providers, would ensure that early diagnosis and treatment for an increase in newborn survival chances take place.

## INTRODUCTION

Necrotizing enterocolitis (NEC) is a disorder of the intestines that typically affects preterm, very-low-birth-weight infants and is characterized by rapid onset, progression, and potential dead-end complications, including intestinal perforation, septicemia, and high mortality rate. The precocious diagnosis becomes then quite necessary because the early treatment can change the course of a so simple and fragile patient. This review demonstrates the crucial part parents play in early identification of NEC by describing how vigilant observation, even on minor changes from parents, could lead to early diagnosis and subsequent outcome. Severe NEC results in large numbers of infants being taken for surgery because of intestinal perforation and often leads to a lethal outcome, but it can be treated immediately if

diagnosed at an early stage. General NEC symptoms are abdominal discomfort, vomiting, feeding difficulties, and tiredness [1]. This post examines the presentation, scoring, and management of neonates with necrotizing enterocolitis. It also states that it would be a demand to treat the patients with Crohn's Disease (CD) as an inter-professional team [2]. NEC greatly increased neonatal morbidity and mortality. Reported mortality rates range from 20 to 40%, and long-term sequelae can be poor with significant developmental delays, including short bowel syndrome [3]. Longer hospitalizations, repeat surgeries, and ongoing feeding problems are common among NEC survivors. Therefore, early recognition and treatment are necessary to minimize morbidity and maximize survival in the neonate [4]. The exploration research study looks to



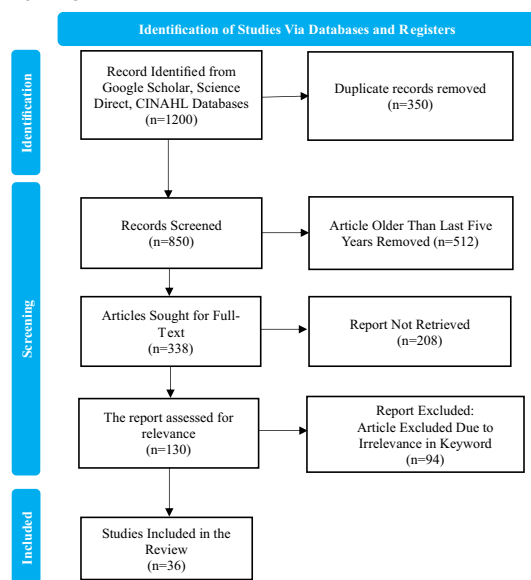


measure the feasibility of involving parents in early identification and whether parental perspectives can contribute to the early initiation of nonverbal cognitive impairment[5].

This study aims to identify and synthesize the published evidence on how parents can help in the early detection of NEC in premature infants, up-to-date the literature specifically related. The literature on this subject specifically addresses whether parents can act concerning NEC and its early diagnosis. The paper also highlights the gaps in the available literature explains the importance of such an issue for the practice, and proposes further research efforts[6].

## METHODS

The research was conducted using the sourced articles from various databases including Pub Med, Science Direct, CINAHL, and Google Scholar. The search parameters included the words 'NEC', 'parental involvement', 'early detection', 'educational programs', and 'premature neonates'. All the studies have been conducted over the last five years and included both qualitative and quantitative approaches. Out of the initial 1200 articles identified through database searches, some of the duplicates were removed, leaving about 850 studies. Out of these, 338 articles were selected for full-text eligibility deserving full review. Ultimately, 22 studies were selected where the topic of parental involvement in the early detection of NEC in premature infants was addressed. Both qualitative and quantitative studies were combined to help further understand how parents were involved in noticing the signs of NEC. This approach is not only beneficial to the data but also aids in the development of evidence-based practices in the field. The Prisma chart is drawn for this study(Figure 1).



**Figure 1:** Studies Involved in This Research

## RESULTS

The analysis of the reviewed literature revealed that the roles of parents in the identification of early signs of NEC. showed feeding problems, unusual irritability, disruption of sleep patterns, and abdominal distension are some of those early warning signs of NEC [11]. Therefore, the parents were the first persons to observe these warning signs frequently. Results show the studies that have been reviewed cover a wide range of methodologies such as surveys, cross-sectional studies, qualitative research, and review papers. Examining the range of methodologies may help understand the perceptions of populations such as parents of infants with NEC and health professionals on the condition. Additionally, knowing the geographical location helps in understanding cultural and systemic influences on parental involvement and healthcare delivery (Table 1).

**Table 1:** The Methodological characteristics of the reviewed studies

| Author | Year of Study | Study Design          | Study Population             | Country |
|--------|---------------|-----------------------|------------------------------|---------|
| [2]    | 2017          | International Survey  | Parents                      | USA     |
| [4]    | 2022          | Qualitative Study     | Parents                      | USA     |
| [6]    | 2019          | Interventional Study  | Infants                      | Canada  |
| [7]    | 2019          | Review                | Unknown                      | -       |
| [8]    | 2020          | Cross-sectional study | Parents                      | Italy   |
| [9]    | 2022          | Review Paper          | -                            | China   |
| [10]   | 2023          | Commentary            | -                            | -       |
| [11]   | 2019          | Review                | -                            | USA     |
| [12]   | 2023          | Review                | -                            | UK      |
| [13]   | 2023          | Reference Work        | -                            | -       |
| [14]   | 2023          | Review paper          | Unknown                      | -       |
| [15]   | 2023          | Survey                | Survivors and parents of NEC | USA     |
| [16]   | 2020          | Review                | Infants And Risk At NEC      | USA     |

Parenting an at-risk newborn for developing NEC is emotionally and psychologically stressful [7]. Research studies have already pointed out that parents repeatedly worry and feel anxiety, primarily because they do not know when to detect and deal with a potential health issue involving their child [8]. According to the study conducted in Thailand, Parents experience more anxiety and confusion during the transition phase after the discharge from the hospital [17]. The parents are generally unaware of the NEC early warning signals and cannot request medical attention in time. Therefore, the infants are delayed in proper treatment, which causes a very high morbidity and mortality rate [9]. The reviewed studies highlight several key aspects related to parental roles and challenges in recognizing and responding to early warning signs of NEC. These studies underscore the need for enhanced educational initiatives targeting parents to equip them with the skills necessary to identify symptoms promptly



and advocate for their child's health effectively. The summary of the literature is presented (Table 2).

**Table 2:** The Summary of the Key Findings of the Reviewed Studies

| Key Aspects                      | Findings   |
|----------------------------------|--|
| Early Warning Signs              | Early warning indicators of NEC, including irregular sleep patterns, unusual irritability, feeding issues, and stomach distension, are commonly noticed by parents.  |
| Emotional impact on Parents      | Anxiety over identifying health problems arises from the emotional and psychological strain of raising a baby who is at risk of getting NEC.   |
| Challenges in the diagnosis      | Despite improvements in medical technology, NEC symptoms remain ambiguous, making early identification more difficult. Early warning indicators are frequently missed by parents, which delays treatment and raises rates of morbidity and mortality.  |
| Need for Education               | There are very few parent education programs available about NEC. Formal curricula that teach parents how to recognize warning indicators are scarce in research, even though they potentially increase the rates of early diagnosis.  |
| Clinical diagnosis challenges    | NEC's clinical diagnosis is made more difficult by its comorbidity with other intestinal diseases. Although there are numerous scoring systems that can achieve sensitivity and specificity of up to 96%, their therapeutic potential is not fully realized.   |
| Prognosis of NEC                 | Total mortality rates range from 10% to 50%, and the prognosis is contingent upon the severity of the disease at diagnosis and the start of treatment. ] Because of the significant intestine damage, advanced instances might result in 100% fatality. The improvement of results depends on early detection. |
| Parental involvement initiatives | To raise parental involvement in care standards and educate them about probiotics, educational activities have been put into place. Parents are in a good position to identify early symptoms that medical experts may overlook.   |

Although prevention programs are highly promising, parents often lack the training and support necessary to effectively manage the complications [7]. Only a few studies report formalized curricula of instruction-teaching parents on identifying warning signs for NEC. Such education significantly enhanced early detection rates and the duration of intervention by health professionals [10]. Many studies have revealed that the etiology of NEC is unknown. There are no specific treatments, and regulatory science is an essential step in advancing drug development [11]. The clinical diagnosis of NEC is still problematic because of overlap with other intestinal pathologies, such as septic ileus and localized intestinal perforation. The sensitivities and specificities of these models are now up to 96%. The therapeutic value of these models has not

been optimally used [12]. The prognosis of NEC is dependent upon the severity of the disease at the time of diagnosis and the start of therapy. Total mortality is within the range of 10% to 50% [13]. Therefore, early detection plays an important role in early treatment and improves its prognosis and the parent is an important key in early identification. The lives of survivors and their families are, however, impacted years after the survivors have been discharged from the NICU, causing a reduction in their general quality of life and affecting their emotional, physical, and social health [14]. Resources and tools endowment by health care providers to families will help them cope with the long-term effects of the condition and ensure appropriate follow-up treatment from infancy up to adulthood. Better family support and all-rounded, quality care should be offered to patients of NEC by being aware of the long-term implications of the condition [15]. Moreover, studies also revealed that survivors of severe NEC often lack severe neurodevelopmental disabilities, allowing them to go to school. Thus, ongoing follow-up care and developmental assessments of children who are victims of NEC become paramount. The role of parents is significant in this aspect as they make sure their child goes to scheduled check-ups, attends developmental screenings, and undergoes any necessary therapies. The long-term effects of NEC on the patient may be made more comprehensible to parents if they are informed about such long-term consequences [18, 19].

## DISCUSSION

The role of parents in early NEC diagnosis is considered an important component of neonatal care as a primary caregiver. Parents, especially mothers can play a critical role in the early identification of NEC and its long-term management [20]. Based on the literature review, there should be structured educational programs for parents, as it is important to raise the parent's awareness of the symptoms of NEC, such as feeding intolerance, abdominal distention, and change in stool pattern, so that the condition can be recognized with early intervention [1]. The result findings also indicate the significant gap in educational initiatives for parents of neonates diagnosed with NEC. Parents and caregivers lack sufficient information regarding NEC's symptoms, treatments, and potential long-term consequences. This lack can lead to challenges in identifying the condition promptly, which is important to delay the diagnosis, which results in severe complications. deficiency in understanding can lead to challenges in recognizing the condition promptly, which is crucial given that delayed diagnosis can result in severe complications [21]. However, parents are unaware of how NEC will affect their child's physical, emotional, and social lives. The scarcity of educational resources makes it more



difficult for parents to cope with the challenges of caring for an infant affected by NEC. Therefore, creating thorough educational reform programs for parents is essential, which includes follow-up care instructions, ways to monitor symptoms, and emotional support options for parents [3]. Also, a collaborative approach should be between parents and caregivers, as it can enhance the outcomes, which will emphasize early detection by the parents. Multiple studies define that parents take part in the early identification of NEC among infants, and their close observation of changes in their behaviour and physical state is the reason they hold a crucial position as the first responders in this respect [16]. According to the studies NICU bedside reading by parent's work is a significant factor that impacts mother-infant bonding and maternal stress. This implies with less stressful environment and enables parents to early indicators for the NEC through direct medical intervention. This will support the Healthcare systems in detecting early signs and symptoms and immediate medical intervention for NEC-diagnosed infants [22]. Well-supported and informed parents are most likely to understand early signs of complications and provide care according to the protocols recommended. Understanding the impact of stress on their parenting role will enable healthcare providers to design interventions to empower parents to take up more responsibility in caring for their children. The conclusions reached from this research indicate that the involvement of the parent is paramount for early recognition and long-term management of such illnesses in children like NEC [18, 23]. Moreover, a requirement for an international consensus in definitions of NEC, to further improve research and outcomes for patients in the setting of parental roles in early NEC detection, since accurate and standardized language will better help parents detect the signs of this disease [24 16]. Comparing the findings with previous studies reveals a consistent theme that parental involvement plays a vital role in the early identification of NEC. Research indicates that the healthcare professional has the ultimate responsibility in the diagnosing of NEC and parents play a pivotal role in identifying their infant's behaviour and health [25]. This aligns with the NEC-Zero Project and the Gut Check NEC toolkit emerging as an important tool in bridging communication gaps between healthcare professionals and patient families [4]. In addition, the NEC Passport helps the parents in addressing the substantial information gap [5]. Both these approaches will empower parents to act as early responders for early diagnosis of NEC, and also, it will support the families to understand and minimize the long-term challenges and complications. The initiatives should be introduced worldwide especially in developing countries to reduce the incidences of NEC. Also, Initiatives such as kangaroo care are beneficial for pre-term and low

birth-weight infants who are at a higher risk for developing NEC. This initiative requires continuous educational program sustainability from healthcare providers for better outcomes to reduce the mortality rate for infants due to NEC [26]. Similarly, many infants experience an average fasting period of 24 days after the onset of NEC. Parents must remain cautious during this time, looking for symptoms of discomfort or feeding complications. Prompt recognition of signs like as intolerance to feeding or stomach distention may encourage parents to seek the advice of healthcare professionals earlier, resulting in quick evaluations and actions [24, 27]. Moreover, another study brings attention to the fact that the Mother's own milk (MOM) can reduce multiple premature morbidities, including NEC [26]. Support from partners and family is crucial in helping the mother sustain exclusive pumping and foster better outcomes for neonates [16]. This education can be disseminated among the parents. The psychological toll of caring for an infant with NEC extends well beyond hospitalization. Parents experienced a heightened level of stress and anxiety due to prolonged hospital stays surgical interventions, and ongoing follow-up care requirements [13]. Accordingly, when parents suspect problems, they should be entitled to seek the right diagnostic tests and act as an advocate for their child's health thus demonstration is important to ensure that the children receive immediate and effective treatment [16]. The impact on mental health can persist into childhood and remains beyond not only the survivors but also the families and the effect on their quality of life (QOL). Families frequently encounter inadequate support systems and barriers to specialized care, which attributed continued health problems to unrelated causes due to the time elapsed since the initial NEC diagnosis. Therefore, healthcare systems must provide adequate support for families navigating these challenges [16]. Integrating the principles of Family-Integrated Care (FICare) offers a helpful approach to addressing the parent's involvement while caring for an infant with NEC [28]. According to the FICare Plus model elements such as performing organized educational programs for parents, the provision of emotional support, and the inclusion of parents in active caregiving will enhance parental competencies regarding NEC care through constant mentoring sessions and emotional support programs [23]. These family-integrated care approaches will prioritize parental involvement to improve the long-term implications of NEC in neonates [29]. Educating parents about the possible long-term implications of NEC and the importance of early intervention may help reduce the emotional and financial burden that families may have to bear in the future [2]. It is essential to implement comprehensive educational reform by emphasizing symptom monitoring, continuous assessment, directions for follow-up care, and ways of



emotional support [22]. Through the assessment, parents, being the primary caregivers, are in the best place to notice anything. Educating parents on early warning signs of NEC may bring in timely intervention that can help limit morbidity and mortality due to this disease [30]. However, parents should be educated on the nutritional management of NEC and feeding techniques once diagnosed. Parents would be able to actively participate in the care of their children, ensuring that all nutritional needs were met [31]. The coordination of these educational initiatives with the principles of palliative care can help healthcare systems better assist families in navigating the complexities of NEC. A palliative care framework would provide families with emotional and decision-making support to address the many challenges of cases with complex NEC. Initiatives that adopt a collaborative approach between parents and healthcare providers can empower parents to become active participants in early detection and long-term management. Such integration enhances parental confidence and fosters better clinical outcomes, including early diagnosis, reduced complications, and improved developmental trajectories for neonates affected by NEC [21]. Literature also suggests that along with the educational reforms financial assistance programs should be offered to the parents by the government and the community agencies to reduce the parent's burden and encourage them to participate in educational initiatives [16]. However, significant gaps exist in the literature regarding the long-term impact of parental involvement in NEC outcomes. There is no standardized course training for parents on these signs of NEC, which might still be a promising area for future research in enhancing parental engagement and safe neonatal care practices [32, 33]. Ultimately, a collaborative approach between health service providers and families may most likely improve health outcomes for vulnerable neonates [34, 35].

## CONCLUSIONS

It was concluded that improving health outcomes for vulnerable newborns impacted by NEC requires a cooperative approach between families and healthcare professionals. We can promote earlier detection and intervention, which will ultimately lower the morbidity and mortality linked to this critical condition, by filling in educational gaps and increasing parental engagement through organized programs. In order to further empower families, future research should concentrate on creating standardized training procedures for parents and investigating efficient communication techniques within neonatal care systems.

## Authors Contribution

Conceptualization: AAA<sup>1</sup>

Methodology: AAA<sup>1</sup>, SS

Formal analysis: AAA<sup>1</sup>, SS

Writing review and editing: AAA<sup>1</sup>, AAA<sup>2</sup>

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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