# Cognitive and Non-Cognitive Determinants of Academic Performance in Nursing

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**ABSTRACT:** *Nursing education is a rigorous and demanding pursuit, requiring a comprehensive understanding of medical knowledge, critical thinking skills, and effective clinical practice. The success of nursing students in academic and clinical settings is influenced by a myriad of factors that encompass both cognitive and non-cognitive determinants. This paper examines the key cognitive determinants, which include critical thinking, problem-solving abilities, clinical reasoning, and memory skills. These cognitive factors provide the foundational framework for grasping intricate medical concepts and making informed decisions in real-world healthcare scenarios. Furthermore, this paper delves into the non-cognitive determinants that significantly impact academic performance in nursing education. Factors such as motivation, emotional intelligence, resilience, and interpersonal skills play a pivotal role in shaping a nursing student's approach to learning, coping with challenges, and delivering patient-centered care. The importance of cultural competence, adaptability, and teamwork is also explored, as they contribute to effective collaboration in the dynamic healthcare environment. Recognizing the intricate relationship between cognitive and non-cognitive determinants is imperative for nursing education programs. By fostering a nurturing learning environment, offering mentorship and support services, and integrating experiential learning opportunities, nursing institutions can equip their students with the tools needed to excel academically and become well-rounded, compassionate, and skilled nurses. This paper underscores the significance of addressing both cognitive and non-cognitive factors to ensure the holistic development of nursing students and their future contributions to healthcare.*
**KEYWORDS:** cognitive, non-cognitive, determinants, academic performance

## INTRODUCTION

According to existing literature, admission requirements include both cognitive and non-cognitive characteristics (Yousafzai & Jamil, 2019). Variables such as Secondary school certificate criteria subject grades and Admission aptitude test scores are among the cognitive elements (Liu et al., 2018). Non-cognitive characteristics, on the other hand, include socio-demographic variables such as age, gender, and experience, among others. The nursing admissions process considers the applicant's past secondary school academic achievement, pre-admission aptitude test score, and demographic information (Roach et al., 2019).

Nursing schools have long relied on secondary school academic achievement as a primary factor in deciding whether to accept a candidate (Mwandigha et al., 2018). Before a person can be accepted, they might need to have a minimum passing score on secondary school certification tests in certain classes (Tiffin et al., 2014). This is probably due to the increasing interest and competition for nursing studies. In countries that use English as their official language, such as Nigeria, English, Mathematics, Physics, Chemistry, and Biology or Health Science are the five main subjects taught.

Demographic characteristics are taken into account to reduce student turnover in academic nursing programs (Gale et al., 2016). Non-cognitive factors that are frequently examined include age, gender, marital status, parity status, and parent occupation (Callwood et al., 2018). Unfortunately, due to a lack of actual data, the demographic background has been used incoherently and inconsistently (Zamanzadeh et al., 2020). The predictive significance of socio-demographic characteristics on academic achievement in nursing schools is vastly underreported (Wambuguh et al., 2016). Nonetheless, it is critical to choose individuals who have professionally designed features for quick graduation and nursing proficiency. Previous studies have examined the potential relationship between academic achievement and secondary school certificate scores, as well as aptitude test results (Kim et al., 2016; Mwandigha et al., 2018; Yousafzai & Jamil, 2019). Academic performance in nursing, like in any other field, is influenced by a variety of factors, both cognitive and non-cognitive. Cognitive determinants involve intellectual abilities and skills, while non-cognitive determinants encompass personal, social, and emotional factors that can impact a student's performance.

### Concept of Academic Performance
Academic performance has been defined in several ways by scholars and experts in the field of education. Terry and Peck (2020) defined it as the outcome of an educational process. Yousafzai and Jamil (2019) added that it is the extent to which students have achieved their preset educational goals. It is often measured via examinations (Al-alawi *et al.*, 2020). Although various domains and constructs are often tested in the name of academic performance, there is no consensus on how it is best examined (Singh *et al.*, 2020). Some examinations favour procedural knowledge (skills)

while others favour declarative knowledge (recall of facts). There exists inconclusive evidence as to what factors can successfully and accurately be predictors or determinants of academic performance among nursing students (Al-alwan *et al*., 2013; Zamanzadeh *et al*., 2020). Several factors classified as cognitive and non-cognitive factors can be found in the literature. In a nutshell, Scholars and education professionals have characterized academic accomplishment in a variety of ways. It is described as the result of an educational process, as well as the extent to which pupils have met their predetermined educational goals.

Exams are frequently used to assess it. Although numerous domains and constructs are commonly assessed in the name of academic success, there is no agreement on how they should be studied. Some exams prioritize procedural knowledge (skills), whereas others prioritize declarative knowledge (recall of facts). There is little data to determine which characteristics are successful and accurate predictors or drivers of academic achievement among nursing students. In addition, various elements classed as cognitive and non-cognitive may be discovered in the literature

**Cognitive Factors Influencing Nursing Students' Ability**
These cognitive factors are primarily related to intellectual abilities and skills that impact a nursing student's ability to grasp and apply complex medical concepts and skills effectively. Nursing involves making quick and accurate decisions in often high-pressure situations. Critical thinking skills enable students to analyze information, evaluate different options, and make informed judgments about patient care. Nursing students encounter a wide range of clinical scenarios that require creative problem-solving. The ability to identify issues, develop solutions, and adapt to changing circumstances is crucial. This is the process of thinking through patient problems and formulating solutions based on clinical knowledge and evidence. Effective clinical reasoning helps students develop appropriate care plans and interventions.

Clinical judgment involves making decisions about patient care based on assessment data, clinical knowledge, and ethical considerations. Strong clinical judgment ensures safe and effective patient outcomes. Nursing students must retain and recall vast amounts of information, including medical terminology, drug interactions, and procedural steps. Effective memory strategies and study techniques are essential. Understanding and interpreting research articles, evidence-based practice, and healthcare literature is important for integrating the latest findings into patient care decisions. A solid grasp of human anatomy and physiology is foundational for understanding diseases, treatments, and patient responses. Nurses frequently calculate medication dosages and administer treatments. Proficiency in mathematical calculations and pharmacology is vital for patient safety. Healthcare technology plays a significant role in modern nursing practice. Nursing students need to be comfortable with electronic health records (EHRs), medical devices, and other technologies used in healthcare settings. Nursing tasks require meticulous attention to detail to ensure accuracy and patient safety. Small errors can have serious consequences, so keen observation is essential. Nursing students manage complex schedules, patient care plans, and administrative tasks. Strong organizational skills help them stay on top of their responsibilities.

Clear communication with patients, families, and colleagues is essential. Nursing students need to convey information effectively and understand patient needs and concerns. Healthcare is dynamic and ever-evolving. Nursing students should be adaptable to changes in protocols, technologies, and patient conditions. Balancing coursework, clinical rotations, and personal life requires effective time management skills. Prioritizing tasks and allocating time efficiently is crucial.Addressing these cognitive determinants through effective teaching strategies, simulation experiences, hands-on practice, and supportive learning environments can significantly enhance nursing students' academic performance and prepare them for successful clinical practice.

**Cognitive Determinants of Academic Performance**
Scholars have recognized cognitive factors of academic achievement over the years. Callwood et al. (2018) described it as IQ and personality traits. It is described by Fong et al. (2017) as factors within an individual student that result from conscientiousness. According to Gale et al. (2016), it is personal variables that foster mental engagement and intellectual curiosity. Methods for assessing intelligence, mental engagement, intellectual curiosity, and conscientiousness have been addressed in certain research.

Mronkjaer et al. (2019) defined cognition as an innate or learned ability to conduct specific mental and bodily activities. Educators frequently use aptitude as a proxy for human intellect, although the two are distinct phenomena (Mathew & Thomas, 2018). They are employed in the admissions process for professional education programs. They are typically used in educational settings to test both crystallized and fluid intelligence (Louridas et al., 2016). The ability to learn from prior experiences, such as interpreting and analyzing information, is referred to as crystallized intelligence. The capacity to abstractly synthesize new concepts to solve new challenges is referred to as fluid intelligence. Pre-admission aptitude tests have been studied as a predictor or influencer of academic achievement among nursing students in several kinds of research. Plouffe et al (2018) and Yousafzai and Jamil (2019) found that a pre-admission aptitude test can predict academic achievement among student nurses. They also noticed that its predictive strength was lower than a secondary school certificate grade.

These are fundamental cognitive factors that contribute to academic success. Nursing students need strong reasoning, critical thinking, problem-solving, and analytical skills to understand complex medical concepts and make sound clinical judgments. Effective study skills, such as time management, note-taking, active learning, and information retention techniques, play a significant role in maintaining high academic performance. Different students have different learning preferences (visual, auditory, kinesthetic, etc.). Understanding one's preferred learning style and adapting study techniques accordingly can enhance comprehension and retention of nursing material.

Nursing students must be adaptable in their thinking, as healthcare situations are often dynamic and unpredictable. The ability to switch between different tasks, perspectives, and approaches is

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crucial. Nursing education involves memorization of medical terminology, drug names, procedures, and anatomical structures. Strong memory and recall skills are important for retaining and applying this information.

Scholars have identified cognitive aspects of academic accomplishment over the years. It is distinguished by intellect and personality traits. It should also be highlighted that conscientiousness is a variable within an individual student; it is also a personal component that fosters mental engagement and intellectual interest. Secondary school certificate examinations and aptitude tests are the most valid and trustworthy instruments for measuring intelligence, mental engagement, intellectual curiosity, and conscientiousness. The secondary school certificate is a public examination that is frequently given by regulatory national education boards. It reflects the level of success in finishing secondary school. It is seen as a mark of academic success attained via secondary school education. The secondary school certificate grade is an academic qualification that signifies that one has established secondary school education objectives. To get a grade in a subject, each student must achieve a particular amount of points. Typically, subject grades range from Alpha (A) to Fail (F). In many countries, educationists will use this Secondary School Certificate grade to evaluate if a student may apply to university or pursue another path. According to reports, secondary school certificate grade qualification is a strong predictor or influencer of academic achievement among nursing students. A pre-admission aptitude test is a test that evaluates a certain sort of mental and physical activity. A pre-admission aptitude test was studied as a predictor or influencer of academic success in nursing students. The academic success of student nurses can be predicted by a pre-admission aptitude test. Furthermore, its predictive potential was shown to be lower than that of a secondary school certificate grade.

**Non-Cognitive Factors Influencing Nursing Students' Ability**
Non-cognitive factors are related to personal, social, and emotional attributes that can influence how well a nursing student performs in their studies and clinical practice. Motivation plays a significant role in academic success. Intrinsic motivation, driven by a genuine interest in nursing and a desire to provide quality patient care, can fuel a student's efforts to excel. Nursing education requires consistent effort and dedication. Students with strong self-discipline can effectively manage their time, study consistently, and meet deadlines. Nursing education can be challenging and stressful. Resilience helps students bounce back from setbacks, cope with difficulties, and maintain a positive attitude in the face of adversity.

Effective stress management skills are crucial for nursing students. Techniques such as mindfulness, relaxation exercises, and time management can help mitigate the impact of stress on academic performance. Grit is the perseverance and passion to achieve long-term goals. Nursing students with grit are more likely to persist through challenges and setbacks to achieve academic success. Emotional Intelligence involves recognizing, understanding, and managing one's own emotions as well as the emotions of others. Strong EQ helps nursing students communicate effectively, build relationships, and provide empathetic patient care. Nursing involves

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collaborating with patients, families, and healthcare teams. Strong interpersonal skills, including active listening, empathy, and effective communication, are essential for successful clinical interactions.

Nursing students should be culturally sensitive and aware of diverse patient populations. Cultural competence helps ensure respectful and effective care delivery. Nursing is a team-based profession. Students who can work well in interdisciplinary teams and contribute positively to group dynamics tend to excel in clinical settings. Healthcare environments are dynamic and can change rapidly. Nursing students who are adaptable and open to new challenges can thrive in diverse clinical situations.

Having a support system of peers, mentors, and family members can provide emotional support and help students navigate challenges. A positive mindset can influence a student's approach to learning and problem-solving. Optimistic students tend to be more resourceful and open to new experiences. Believing in one's ability to overcome challenges and succeed is crucial. High self-efficacy fosters confidence and a proactive approach to learning and clinical practice. Prioritizing physical, emotional, and mental well-being contributes to overall performance. Students who practice self-care are better equipped to handle the demands of nursing education.

Addressing non-cognitive determinants involves creating a supportive and inclusive learning environment, offering mentorship and counseling services, promoting wellness initiatives, and integrating activities that enhance interpersonal skills and emotional intelligence. By nurturing these attributes, nursing programs can help students thrive both academically and in their future careers as compassionate and skilled nurses.

**Non-Cognitive Determinants of Academic Performance**

Non-cognitive factors are argued by some educational theorists to be a considerable variable that could affect academic performance among nursing students (Pinehas *et al*., 2017). Consequently, socio-demographic characteristics are progressively being explored in current times. Socio-demographic factors include variables such as age, gender, marital status, parity status, occupation of parents among others (Al-alawi *et al*., 2020). The influence of age, marital status, and parents' occupation on academic performance is relatively under reported in literature. More so, some researchers such as Alshanmari *et al* (2018) and Lancia *et al* (2018) have reported no significant association between academic performance of student's nurses and their age, marital status, and parents' occupation. That said, gender as a non-cognitive socio-demographic variable has shown mixed results. Bearing in mind that more than 80% of nurses are females, empirical results and theoretical abstractions require cautious interpretation.

Intrinsic motivation (interest in the field) and extrinsic motivation (external rewards) both influence academic performance. A strong desire to excel in nursing can drive students to invest more effort in their studies. This refers to an individual's belief in their ability to successfully accomplish tasks. Students with high self-efficacy tend to approach challenges more confidently

and perform better academically. Mental health and emotional stability are crucial for academic success. Stress, anxiety, and depression can hinder learning and cognitive function. A supportive environment and coping strategies are important for maintaining emotional well-being.

Having a strong network of peers, mentors, and family members can provide emotional and academic support. Peer collaboration, study groups, and mentorship programs can positively impact performance. Nursing education can be demanding and stressful. The ability to bounce back from setbacks, manage stress, and persist in the face of challenges is important for academic success. Nursing involves interacting with patients, families, and colleagues. Effective communication skills, including active listening and empathy, are critical for clinical practice and academic success. Nursing students should be sensitive to diverse patient populations. Cultural competence and open-mindedness contribute to better patient care and successful interaction with instructors and peers.

Alshanmari *et al* (2018), Yousafzai and Jamil (2019) suggested that masculine gender predicted better academic performance in nursing programmes. In contrast, Lancia *et al* (2018) noted that feminine gender predicted better academic performance in nursing programmes. Furthermore, other researchers such as Plouffe *et al* (2018) did not observe this effect or association. In a nutshell, Non-cognitive variables are thought to be a significant component that can influence academic achievement in nursing students. As a result, socio-demographic aspects are increasingly being investigated in modern times. Age, gender, marital status, parity status, and parental occupation are examples of socio-demographic parameters. The impact of age, marital status, and parents' employment on academic success have received little attention in the literature. Furthermore, it has been found that there is no substantial relationship between student nurses' academic performance and their age, marital status, or parents' employment. Gender, as a non-cognitive socio-demographic characteristic, has had inconsistent outcomes. Given that a large proportion of nurses are female, empirical findings and theoretical abstractions must be interpreted with caution. It has been proposed that masculinity predicts greater academic achievement in nursing programs. In contrast, the female gender was found to indicate superior academic achievement in nursing programs. Furthermore, no evidence of this impact or relationship was found.

**CONCLUSION**

In conclusion, academic performance in nursing is influenced by a complex interplay of cognitive and non-cognitive determinants. Both types of factors are integral to a nursing student's success in their educational journey and future clinical practice. Cognitive determinants, encompassing intellectual abilities and skills, include critical thinking, problem-solving, clinical reasoning, and the ability to retain and apply medical knowledge. These cognitive skills provide the foundation for understanding complex medical concepts and making informed clinical decisions.

Non-cognitive determinants, which are personal, social, and emotional attributes, play an equally vital role. Motivation, self-discipline, resilience, and emotional intelligence shape a student's approach to learning, adaptability to challenges, and capacity to provide empathetic patient care. Interpersonal skills, cultural competence, and teamwork capabilities are essential for effective collaboration in healthcare settings. Recognizing and addressing both cognitive and non-cognitive factors is crucial for nursing education programs. A comprehensive approach that fosters a supportive learning environment, offers mentorship and counseling, promotes wellness initiatives, and integrates experiential learning opportunities can help nursing students excel academically and develop into well-rounded, competent, and compassionate nurses.

By acknowledging the importance of both cognitive and non-cognitive determinants, nursing education institutions can empower their students to not only succeed academically but also contribute positively to the field of healthcare and make a meaningful impact on the lives of patients and communities. Both cognitive and non-cognitive determinants interact and influence each other. For instance, a student with strong cognitive skills but low motivation may not perform as well as a student with moderate cognitive skills but high motivation. Therefore, addressing a combination of cognitive and non-cognitive factors is essential for fostering academic success in nursing education.

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