Original Research Paper

The Learning Styles and Academic Performance of Nursing Undergraduates in a Sri Lankan Defence University

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Abstract

Introduction: Learning styles play a significant role in the academic performance of nursing undergraduates. The main aim of this study was to evaluate the relationship between preferred learning styles and academic performance among nursing undergraduates in a defence university in Sri Lanka.

Methodology: The study was conducted as a descriptive correlational study among nursing undergraduates studying at General Sir John Kotelawala Defence University, Sri Lanka. The socio-demographic data, preferred learning styles, and academic performance were evaluated by a general questionnaire, Honey and Mumford questionnaire, and via last Semester's Grade Point Average (SGPA) respectively. The data analysis was performed by SPSS 23.0. The relationship between preferred learning styles and academic performance was determined using the Pearson correlation test while the mean differences between SGPA and preferred learning styles were determined using one-way ANOVA.

Results: The response rate of the participants was 69.6% (n=126), and their average (SD) age was 23.65(3.82) years. Reflector had the highest mean (SD) score (7.931.57), and Activist had the lowest (6.161.61). Activist (p = 0.002, r = -0.356) and Theorist (p = 0.048, r = -0.234) had significant negative correlations with SGPA. There was no significant difference between the SGPAs of the four student batches (p=0.095). There was no significant difference in mean SGPA among the four batches (p=0.095). Activist (p=0.004), Theorist (p=0.034) and Reflector (p=0.03) had significant mean differences among the four batches. The Activist (p=0.002, r = -0.356), and Theorist (p=0.048, r = -0.234) had negative significant correlations with SGPA.

Conclusion: The results of the current study can be applied and used to improve the teaching and learning experiences of nursing undergraduates.

Keywords: Learning styles, Academic performance, Nursing undergraduates

Introduction

Everyone has a unique process of learning (Samarakoon *et al*., 2013). Moreover, it does not occur in all individuals of the same level and caliber in the same educational environment. (İlçin *et al.,* 2018).

A person's learning style is the personalized and preferred way he or she perceives, processes and retains new information and skills (Kharb, 2013). Multiple studies have demonstrated that students acquire and process information using distinct strategies. These differences indicate a student's preferred learning method (Güneş, 2018).

Learning styles are essential components of educational psychology in any field,

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characterized by enduring affective and cognitive behaviours indicating how everyone engages in learning settings or situations (Armstrong *et al.,* 2012; Cassidy, 2004). Individuals use diverse approaches during the learning process, and a single strategy is unable to provide optimal learning conditions for everyone (Brown et al., 2009). This could be a result of student-related factors such as diverse backgrounds, strengths and limitations, motivation levels, etc. (Felder & Brent, 2005). To make effective plans and deliver effective learning–teaching activities, educators must understand which learning styles students employ (Kirschner, 2017; Koohestani *et al.,* 2018).

Instruction in the field of healthcare professions education relies heavily on a combination of didactic and practical elements that capture students' attention through a variety of sensory inputs. This complexity of healthcare professional education emphasises the importance of understanding the preferences that may exist among healthcare professional students and their specifics. Learning about these preferences has the potential to increase efficacy of the education process for healthcare professionals. It is possible to enhance the professional development of health professionals by identifying their preferred learning techniques (Koohestani *et al.,* 2018).

To satisfy the ever-evolving requirements of the nursing profession, nursing education too is continuously evolving. Currently, lengthy teaching hours and rote memorization are outmoded practices. To satisfy the requirements and demands of the profession, it is essential to implement new and innovative teaching strategies (AlMezeini & Almaskari, 2021). Consequently, nursing professional development can be improved by identifying nurses' preferred learning styles. (Dickerson, 2017; Kumara & Sudusinghe, 2021). In addition, it is hypothesized that clinical experience and academic performance on exams are related to learning approaches (Samarakoon *et al.,* 2013). Consequently, determining learning needs is also essential for planning nursing professional development activities that resolve educational deficiencies and lead to safe patient care and positive outcomes of patients (Mangold *et al.,* 2018).

Various instruments have been utilised in nursing and health care to assess learning style preferences. Of these, Kolb's Learning Styles Inventory is the most frequently used (Mangold *et al.,* 2018). In some studies, Honey and Mumford's Learning Style Questionnaire is proposed as the alternative to Kolb's Learning Style Inventory (Duff & Duffy, 2002). It assesses students on how they learn in four main learning styles, i.e. activist, reflector, theorist, and pragmatist (Honey & Mumford, 2000). According to Honey & Mumford's Learning Style model, activists have up-to-date knowledge and comprehension, are eager for current information, give effective speeches, and do not accept monotonous, non-interactive activities such as sitting still for long periods or listening to explanations without interaction. They are more into innovative activities and group discussions. They are adept at figuring out solutions, establishing good interactions with others, and having successful communication. The reflective learner prefers to collect exhaustive data and knowledge. Because s/he is circumspect, s/he frequently contemplates findings before acting. Those who possess a theorist learning style are eager for clarification. Theorists favour complexity and meticulously demonstrate their claims. They favour plainly defined objectives. Pragmatic learners are eager to investigate and discover new strategies and determine whether they are effective and/or legitimate. They prefer to focus on real-world challenges and scenarios for resolving problems (Czepula *et al.,* 2016).

A longitudinal study carried out on the learning styles of pre-registration nursing students at an Irish university utilized. The Honey and Mumford (2000) Learning Styles Questionnaire to a sample of students in their first (n=202) and final (n=166) years of study; the final sample size (n=58) was determined by matching partners. Out of the population, 35% of students in their first year had a dual learning style as their dominant learning style, while 53% of students in their final year had no dominant learning style. The preferred learning approach of first-year (69%) and senior (57%) students was ‘reflective’. There was a significant correlation between some learning styles and age, but not with academic performance between the two periods of time. The cumulative scores for all learning styles enhanced substantially across the two study time intervals (Fleming *et al.,* 2011). In another

study conducted in the United Kingdom, undergraduate nursing students' preferred learning styles and their impact on educational outcomes were identified. A sample of 110 nursing undergraduates completed the demographic survey and Honey and Mumford's learning styles questionnaire. The educational outcomes were assessed using a pre-posttest design. Most undergraduate nursing students preferred reflective modes of learning (Rassool & Rawaf, 2008).

To the best of our knowledge, few published studies describe the learning approaches of undergraduate nursing students in Sri Lanka. In addition, previous research conducted in Sri Lanka has utilised the Kolb Learning Style Inventory (LSI) (Sugathapala *et al.,* 2015) or the VARK questionnaire (Edussuriya *et al.,* 2016) to assess learning styles. Some studies have recommended using different inventories to assess learning behaviour and styles (Mountford *et al.,* 2006). We selected the Honey and Mumford learning styles questionnaire for evaluating the learning styles of nursing undergraduates as it is a valid and reliable instrument for accurately identifying learning styles. Hence, this study sought to determine the relationship between the learning method and academic performance of undergraduate nursing students at a Sri Lankan military university.

Methodology

Study Design, Study Setting and Population

In the year 2020, the study was conducted as a descriptive correlational study among four batches (1st, 2nd, 3rd, and 4th year) of the nursing undergraduates (N=126) attached to the Department of Nursing and Midwifery, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka.was conducted as a descriptive correlational study among four batches (1st, 2nd, 3rd, and 4th year) of the nursing undergraduates (N=126) attached to the Department of Nursing and Midwifery, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka.

Data Collection

After obtaining ethical approval and institutional permission, data collection was conducted.

Data collection tools

A pre-tested, self-administered questionnaire was used as the key data collection tool. The questionnaire consisted of two components. The first component contained socio-demographic and other details like age, gender, ethnicity, academic year, etc. and the second component was the Honey and Mumford Learning Styles Questionnaire (Honey & Mumford, 2000) which is known as a valid and reliable (Cockerton *et al.,* 2002; Duff & Duffy, 2002) and freely available tool designed to identify the learning styles of an individual. The Honey and Mumford Learning Styles Questionnaire was originally designed to assess the preferred learning styles of management apprentices. It has since been applied to a variety of subjects, including students in higher education (Duff and Duffy, 2002). The questionnaire's learning styles section consists of forty questions: ten for each of the four learning styles (activist, reflector, theorist, and pragmatist). Every correct response was assigned 1 point, while no responses were not graded, and negative responses were not penalized. Each learning approach was worth up to 10 points. The completion of the questionnaire has taken approximately 15 minutes. The Semester Grade Point Average (SGPA) from the previous semester was obtained as the measure of academic performance. The Questionnaire was administered after cross-cultural adaptation to the Sri Lankan setting and then after a pre-test conducted among eight BSc nursing undergraduates. The participants of the pre-test were excluded from the study.

Data analysis

Both descriptive and inferential statistics were utilised to analyse the data. Descriptive statistical methods such as mean (SD), frequencies, and percentages were used. Using inferential statistical methods such as Pearson Correlation, the relationship between preferred learning styles and Academic Performance was measured. Using one-way ANOVA, the mean differences between SGPA and preferred learning styles were calculated. In addition, the chi-square test was used to assess the associations between categorical variables. SPSS version 23 was used for data entry and analysis. $p < 0.05$.was determined to be the significance level.

Ethical considerations

The Ethics Review Committee of the Faculty of Medicine at General Sir John Kotelawala Defence University and the Dean of the Faculty of Allied Health Sciences at KDU, respectively, granted ethical and institutional approval for the study. All procedures were carried out under applicable laws and institutional regulations. In addition, the participants were informed of the study's objectives and participants' informed consent was obtained prior to data collection. Privacy and confidentiality were maintained throughout the research process. No participant identities have been noted on the questionnaires. Instead, each participant's institutional registration number was collected to correlate the SGPA from their results sheets. Participants were permitted to submit queries and complaints as contact information of the investigators was available. No physical or psychological dangers existed for those who took part in the study. The participants were informed, however, that their participation was voluntary and that they could resign from the study at any moment and without explanation. They were also informed that their academic activities would not be affected by their withdrawal from their studies. Only the principal investigator had access to the entire database. No information or data was shared with a third party. After five years, all collected information will be eliminated permanently from a password-protected electronic device. Everyone who participated was apprised that their participation in the study would be wholly voluntary and that no incentives or monetary compensation would be provided.

Results

Socio-demographic data of the participants

The socio-demographic details of the participants are shown in Table 1. The response rate was 69.6% (n=126), and the mean (±SD) age of the participants was 23.65(±3.82) years. Most were female (79.4%, n=100) (Table 1).

Table 1: Socio-demographic characteristics

Variable	Mean (±SD)/n (%)
Age (years), Mean (± SD)	23.65(±3.82)
Gender	
Male	26 (20.6)
Female	100(79.4)
Academic year	
First	39(31.0)
Second	20(15.9)
Third	35(27.8)
Fourth	32(25.4)

Table 2: Learning styles of the participants

Learning Style	Overall Mean(±SD)	1st year Mean (±SD)	2nd year Mean(±SD)	3rd year Mean(±SD)	4th year Mean(±SD)
Activist	6.16(±1.62)	6.00(±1.79)	6.20(±1.11)	5.57(±1.85)	6.97(±1.00)
Theorist	7.27(±1.86)	7.64(±1.97)	7.70(±1.17)	6.51(±1.84)	7.38(±1.91)
Pragmatist	6.83(±1.81)	6.74(±2.04)	7.35(±1.93)	6.40(±1.80)	7.06(±1.37)
Reflector	7.93(±1.58)	8.18(±1.78)	8.60(±1.31)	7.40(±1.27)	7.78(±1.62)

Preferred Learning Styles of the Participants

The mean values scored for each preferred learning style are shown in Table 2. The highest mean(±SD) score was reported for the reflector learning style (7.93±1.57) and the lowest mean score was reported by the Activist (6.16±1.61) (Table 2).

There was no significant difference in mean SGPA among the four batches (p=0.095). Activist (p=0.004), Theorist (p=0.034) and Reflector (p=0.03) had significant mean differences among the four batches. The Activist (p=0.002, r = -0.356), and Theorist (p=0.048, r = -0.234) had negative significant correlations with SGPA.

Discussion

The primary objective of this study was to examine the relationship between the preferred learning style and academic performance of undergraduate nursing students at a Sri Lankan defence university. To determine the correlation, the preferred learning style of each nursing undergraduate and their SGPA were evaluated. In the current study, the predominant preferred learning style was reflector among nursing undergraduates, and it was congruent with a study conducted in the UK (Rassool & Rawaf, 2008). Reflectors learn better by observing others at work and reviewing incidents and things they learnt (Honey & Mumford, 2000). Therefore, the reflector learning style is one of the best styles for undergraduates who are following health-related degrees which involve more evidence-based learning (Lehane *et al.,* 2019). However, the mean scores for reflector learning style preference have reduced with the advancement of the academic year in the current study. The possible explanation for this reduction might be reduced enthusiasm when they get used to the university system or reduced reflective practice activities in the teaching and learning process. The least preferred learning style was activist, and this preference increased as the academic year progressed, with fourth-year undergraduates reporting the greatest preference for this learning style. The most effective way for activists to learn is by engaging in new experiences, problems, and opportunities, collaborating with others in team tasks or role-playing, tackling a challenging task, chairing meetings, conducting discussions, etc. (Honey & Mumford, 2000). The most plausible explanation for our findings would be increased clinical training and exposure to new experiences with the advancement of the academic years.

Academic achievement is a predictor of student's performance and learning capacity (Alharbi et al., 2017). In the present study, the SGPA was used as an indicator of the academic accomplishments of undergraduate nursing students. The SGPA score and the activist, theorist, and reflector learning styles differed significantly in this study. Similarly, a Saudi Arabian study conducted among dental students reported a significant relationship between academic performance and learning preferences (Al-Saud, 2013). However, a non-significant association between GPA and learning style was reported in a Turkish study conducted among first-year medical undergraduates (Baykan & Naçar, 2007).

The findings of the current study are beneficial for augmenting the quality of teaching and learning for undergraduates pursuing degrees in the healthcare professions. The most significant implication for teaching is the need for multiple approaches to accommodate various learning methods in the classroom. Unfortunately, many educators are oblivious to their students' preferred learning styles; and thus employ a limited number of teaching methods, which can be detrimental to students. As a result, the content of an educational programme that caters to a single learning style would fail to satisfy the expectations of many learners, as they would experience difficulties with comprehension, retention, and annoyance. Ultimately, it would result in poor academic performance and harm lifelong learning (AlMezeini & Almaskari, 2021). Hence, educators must be aware of the different learning styles of learners and should experiment with a range of educational, and clinical methodologies (Kumara & Sudusinghe, 2021) and cater to learners' multiple intelligences (Kumara *et al.,* 2020).

Due to the limited sample size and the use of a singular university for data collection, the findings of the present study cannot be generalised to all undergraduate nursing students in Sri Lanka. To determine if the current findings apply to the entire target population, it is suggested that future research employing larger sample sizes and disciplines other than nursing be conducted.

Conclusion

The results of this study indicate that reflector is the preferred learning strategy among nursing undergraduates, whereas activist is the least preferred. This study highlights the need for university instructors to be aware of the preferred learning approaches of their students. This could contribute to the advancement of the profession of nursing in Sri Lanka and facilitate the implementation of evidence-based learning in health care education.

Data availability

The data used to support the findings of this study are available with the corresponding author upon request.

Competing interests

None of the authors has any conflict of interest to report.

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