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Self-Regulated Learning of Nursing Students: A Cross-Sectional Study

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ABSTRACT

The nursing degree program requires the students to be resilient due to the high learning burden of theoretical courses and clinical attachment requirements. The ability of the students to self-regulate their learning has been postulated for success. In this study, we aim to investigate the self-regulated learning level of nursing students at one public institution and identify the self-regulation aspects that warrant a remediation plan to be developed. A cross-sectional survey was conducted online. Active status students in one public institution's Bachelor of Nursing program were invited to participate in this study. The invitation was distributed online via social media and email, where they are required to self-administer the Motivated Strategies for Learning Questionnaire (MSLQ) through Google Forms. Thereafter, responses from 63 students with a response rate of 64.3% were received. Most respondents are female (76.2%), Malay (74.6%), in year 4 of their bachelor's study (33.3%), and in the lower household income category (69.8%). Most self-regulation aspects of the students have been found to be at a satisfactory level except for specific learning strategies. Participants' characteristics such as gender, ethnicity, study cohort, and academic achievement were determined to have a significant association with a small aspect of self-regulation. Interestingly, household income is the primary factor significantly associated with almost all self-regulation aspects. Being in the lower-income category was predominantly associated with higher motivation domains. In contrast, being in the middle-income category was predominantly associated with better learning strategies and resources. Comparatively, this study indicates that nursing students achieved the highest level in 8 of 15 self-regulation aspects than other learner populations in Malaysia. Learning strategies which exercise higher autonomy and resource management are warranted. This recommended various approaches which foster active and collaborative learning to be implemented for the students to improve their self-regulation skills. Students, especially from the highest income bracket, are the most critical and thus require attention from educators.

Keywords: nursing students, self-regulated learning, motivated strategies, learning strategies, education

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INTRODUCTION

A nursing degree is known to be one of the most challenging health sciences academic programs. In addition to the theoretical courses comprising 100 credit hours—similar to other health sciences programs—a nursing degree requires more than 2000 hours of practical and clinical attachments which are double that of other health sciences programs (1, 2). Therefore, pursuing a nursing degree would require its students to stay resilient to survive. Self-regulation has been recognized as a learning approach that can facilitate better task achievements (3). Self-regulated learning has been widely investigated in medical education (4, 5); however, the literature related to nursing education remain to be scarce, especially in the context of Malaysia.

Self-regulated learning is identified as a strategy to enhance learners' attitudes toward participating actively in learning activities and taking ownership of the learning process (3). Educators could promote learners' self-regulated learning by creating a supportive environment such as developing student-centric activities, demonstrating facilitating skills, providing constructive feedback, and utilizing formative assessments (3, 6). However, among studies in health professions education, including nursing education, self-regulated learning is often investigated in clinical education, resulting in some doubts about the application of self-regulated learning in preclinical education (6). Therefore, Lee et al. (7) observe that as substantial learning hours are spent in classrooms, investigations of self-regulated learning in the classroom setting may produce valuable recommendations for future teaching practices. Furthermore, each discipline is distinctive, and generalizing past findings from one discipline to another may be less compelling (8, 9). Self-regulated learning is a complex subject matter where it is difficult to translate research findings in clinical education into teaching and learning practices for preclinical education (4, 5). There is limited evidence to support that available strategy can provide an opportunity to help learners develop capacities to self-regulate their studies explicitly.

However, in other disciplines, self-regulated learning has shown effective outcomes. A review indicates that self-regulated learning in the mathematics discipline could positively enhance learners' acquisition of knowledge and develop interest and satisfaction in studies due to participation in meaningful learning activities, and self-regulated learning is critical for learners' success (10). Self-regulated learning needs to be gradually introduced and regularly reinforced for the learners to become familiar with and be prepared to enable the application of regulated learning to improve their learning processes (11). Meanwhile, using appropriate measurement tools and clear planning strategies are found to be critical to excavate the benefits of self-regulation (11). Therefore, in this study, we aim to investigate the levels of self-regulated learning level among nursing students. Based on the findings, this study proposes a remediation plan to enhance the students' self-regulation capacities.

METHODS

Study design

This was a cross-sectional study where an online questionnaire was distributed using the Google Forms. The survey was conducted among all Bachelor of Nursing students at one public institution in Malaysia. Inclusion criteria for participants were nursing students with active student status, while no specific exclusion criteria were imposed. Link to the online questionnaire was disseminated via WhatsApp application to the student representatives for each cohort (i.e., Years 1, 2, 3, and 4). An invitation was sent to the official emails of the students. Snowball sampling was applied; students were encouraged to re-disseminate the questionnaire link to their peers. Students' participation was voluntary and on a good intention basis; there was no incentive. The Google Forms consisted of Participant Information Sheet, and the participants needed to click the consent button before answering the questionnaire. Therefore, submission of the questionnaire indicated the act of agreement and consent. Ethical clearance was received for this study. This study was conducted from May to June 2021. Three calls were made to students, and the calls enhanced the recruitment of respondents (12).

Data collection procedure

Instrument

The first part of the questionnaire collected demographic information of the respondents such as gender, ethnicity, family income brackets, Cumulative Grade Point Average (CGPA), and year of studies. The second part of the questionnaire consisted of the Motivated Strategies for Learning Questionnaire (MSLQ). This current study adopted Lee et al.'s (7) version. The time required to complete the survey was approximately 15–20 minutes.

The questionnaire was an 81-item self-administered instrument investigating two aspects of self-regulated learning, namely, the motivation value and learning strategies. Each item was scored on a 7-point Likert scale (1 = not at all true of me; 7 = very true of me). Under motivation value, the sub-domains were intrinsic goal orientation (INTR), extrinsic goal orientation (ENTR), task value (TASKV), control of learning beliefs (CNTRL), self-efficacy (SEFF), and test anxiety (TANX). Meanwhile, under learning strategies, the sub-domains were rehearsal (RHRSL), elaboration (ELAB), organization (ORNGZ), critical thinking (CRTHK), metacognitive self-regulation (METACOG), time and study environment (TSTDY), effort regulation (EFFREG), peer learning (PEERLRN), and help to seek (HPSEEK) (7). The total score was calculated according to the 15 sub-domains by summing the ratings from respective items representing a sub-domain; the items were randomly arranged and required referral to the users' manual. In addition, prior to the calculation, several item ratings needed to be reversed (i.e., #33, #37, #40, #52, #57, #60, #77, #80).

A higher score indicates greater reflection on the sub-domain. Sub-domains can be further combined as motivation value (INTR, ENTR, TASKV, CNTRL, SEFF, TANX), learning strategies in cognitive (RHRSL, ELAB, ORNGZ, CRTHK, METACOG), and learning strategies in resources (TSTDY, EFFREG, PEERLRN, HPSEEK). The MSLQ has extensive evidence of reliability and validity, and it is widely used internationally, including in Malaysia.

Data Analysis

Statistical Package for the Social Sciences (SPSS) 27 was used to analyze the data. Data were analyzed descriptively by reporting the mean value for each sub-domain in the MSLQ. In addition,

inferential analyses were conducted to determine if any demographic factor was associated with the MLSQ results, either using Pearson's correlation, independent t-test, or one-way ANOVA, depending on the type of the demographic data. Next, a comparison was made between past studies by comparing the mean values for each MSLQ's sub-domain. According to Yusri et al. (13), the value of 1.00 to 3.00 is interpreted as low, 3.01–5.00 as moderate, and 5.01–7.00 as high.

RESULT

There were 98 active students in the Bachelor of Nursing program at the institution at the time this study was conducted, and 63 students responded to this survey (response rate of 64.3%). Most respondents were female (n = 48, 76.2%), Malay (n = 47; 74.6%), in year 4 (n = 21; 33.3%), and belong to the B40 household income category (n = 44; 69.8%) (Table 1). The mean of the CGPA of the respondents was 3.530 out of 4.000 (95% CI: 3.475–3.584), and the data was normally distributed (kurtosis, -0.626; skewness, -0.215; Shapiro-Wilk, p = 0.295); therefore, parametric tests were used for analysis.

Table 1: Demographic characteristics of the respondents (n = 63)

Characteristic		N (%)	Mean (SD)
Gender	Male	15 (24.8)	
	Female	48 (76.2)	
Ethnicity	Malay	47 (76.5)	
	Other Bumiputera	7 (11.1)	
	Chinese	8 (12.7)	
	Indian	0 (0)	
	Others	1 (1.6)	
Year of study	Year 1	20 (31.7)	
	Year 2	10 (15.9)	
	Year 3	12 (19.0)	
	Year 4	21 (33.3)	
Household income	T20 (>RM10,959)	4 (6.3)	
	M40 (RM4,850–RM10,959)	11 (23.8)	
	B40 (<RM4,850)	44 (69.8)	
CGPA			3.530 (0.217)

Following the guideline by Yusri et al. (13), overall value for each sub-domains of self-regulation of the nursing students is considered at high level. However, attention needs to be given to the metacognitive self-regulation, time and study environment, effort regulation, and help to seek sub-domains as these received score value lower than 5.00.

Table 2: MSLQ's sub-domain score (N = 63).

MLSQ Dimension	MLSQ Sub-domain	Score Value Mean (SD)	Interpretation
Motivation	Intrinsic goal orientation	5.35 (0.93)	High
	Extrinsic goal orientation	5.74 (0.96)	High
	Task value	5.74 (0.80)	High
	Control of learning beliefs	5.73 (0.87)	High
	Self-efficacy	5.07 (0.92)	High
	Test anxiety	5.47 (1.01)	High
	Learning strategies (cognitive)	Rehearsal	5.53 (0.90)
	Elaboration	5.40 (0.87)	High
	Organization	5.35 (0.98)	High
	Critical thinking	5.21 (0.87)	High
	Metacognitive self-regulation	4.82 (0.62)	Moderate
Learning strategies (resources)	Time and study environment	4.59 (0.58)	Moderate
	Effort regulation	4.50 (0.76)	Moderate
	Peer learning	5.51 (0.93)	High
	Help-seeking	4.89 (0.71)	Moderate

Factors associated with the students' learning motivation and strategies

Several demographic characteristics were significantly associated with MSLQ's sub-domains. Using the independent t-test, gender was significantly associated with RHRSL ($p = 0.013$) and ORNGZ ($p = 0.033$). Male students were found to have higher preference to intrinsic goal motivation ($m = 23.23$; $SD = 3.139$) than female ($m = 20.97$; $SD = 3.826$).

Ethnicity was re-grouped into two categories due to the small representation in the initial categories. Firstly, to compare Bumiputera (Malay and other Bumiputera) with Non-Bumiputera (other ethnicities), a significant association was found only on EFFREG ($p = 0.037$), where the non-Bumiputera had higher effort regulation than Bumiputera ($m = 5.03$; $SD = 0.619$ vs $m = 4.43$; $SD = 0.756$). Secondly, to compare Malay with non-Malay (other Bumiputera and other ethnicities), a significant association was found only on HPSEEK ($p = 0.045$), where the Malay is better in help-seeking than the non-Malay ($m = 5.01$; $SD = 0.674$ vs $m = 4.60$; $SD = 0.687$), respectively.

Based on one-way ANOVA analysis, the year of studies was significantly associated with INTR ($p = 0.030$), TSTDY ($p = 0.004$), and EFFREG ($p = 0.020$). Year 1 and year 4 students were found to have greater intrinsic goal orientation than year 2 and year 3 students ((INTR: $Yr1_{Mean(SD)} = 5.43(0.987)$, $Yr2_{Mean(SD)} = 5.00(0.833)$, $Yr3_{Mean(SD)} = 4.83(0.779)$, $Yr4_{Mean(SD)} = 5.73(0.862)$), but the significant difference was between year 3 and year 4 students only. For TSTDY, year 2 had the best value, and it was significantly different than other year of relatively similar studies ((TSTDY: $Yr1_{Mean(SD)} = 4.42(0.323)$, $Yr2_{Mean(SD)} = 5.18(0.613)$, $Yr3_{Mean(SD)} = 4.54(0.587)$, $Yr4_{Mean(SD)} = 4.52(0.609)$). Next, the EFFREG showed significant difference between year 2 with year 1 and year 4 ((EFFREG: $Yr1_{Mean(SD)} = 4.31(0.388)$, $Yr2_{Mean(SD)} = 5.15(0.728)$, $Yr3_{Mean(SD)} = 4.54(0.838)$, $Yr4_{Mean(SD)} = 4.35(0.864)$).

Pearson's correlation indicated that there was significant association between CGPA with TSTDY ($r = 0.346$; $p = 0.005$) and EFFREG ($r = 0.387$; $p = 0.002$). This indicated that students with higher CGPA utilized time and environment better for their studies and emphasized greater effort to study.

Household income was significantly associated with almost all MSLQ's sub-domains except two (Table 2). In general, it showed that respondents from the lower-income bracket had higher outcomes on most of the MSLQ's motivation sub-domains. It was consistent across the three groups (B40 > M40 > T20). In comparison, the learning strategies were noted to be mostly higher in the middle-

income bracket, consistent across the three groups (M40 > B40 > T20). However, none of the sub-domains achieved high level for the high-income group of students.

Table 3: Comparison on MSLQ's sub-domain score according to family income bracket.

Dimension	Sub-domain	B40		M40		T20		P-value
		Mean	SD	Mean	SD	Mean	SD	
Motivation	Intrinsic goal orientation	5.49	0.905	<i>5.30</i>	0.775	3.94	0.657	0.005*
	Extrinsic goal orientation	5.88	0.905	<i>5.73</i>	0.821	4.19	0.898	0.002*
	Task value	5.87	0.620	<i>5.78</i>	0.856	4.17	0.882	<0.001*
	Control of learning beliefs	<i>5.82</i>	0.740	5.85	0.934	4.25	0.866	0.001*
	Self-efficacy	5.30	0.799	<i>4.80</i>	0.838	3.59	0.954	<0.001*
	Test anxiety	5.59	1.032	<i>5.45</i>	0.742	4.25	0.900	0.035*
Learning strategies (cognitive)	Rehearsal	<i>5.54</i>	0.839	5.80	0.797	4.38	1.233	0.016*
	Elaboration	<i>5.40</i>	0.789	5.71	0.820	4.21	1.092	0.007*
	Organization	5.44	0.894	<i>5.40</i>	1.047	4.19	1.106	0.046*
	Critical thinking	5.28	0.833	<i>5.24</i>	0.866	4.25	0.957	0.073
	Metacognitive self-regulation	<i>4.84</i>	0.560	4.98	0.667	4.00	0.605	0.015*
Learning strategies (resources)	Time and study environment	<i>4.52</i>	0.451	4.95	0.786	4.09	0.237	0.007*
	Effort regulation	<i>4.35</i>	0.629	5.12	0.839	3.88	0.433	<0.001*
	Peer learning	<i>5.52</i>	0.893	5.78	0.870	4.50	1.139	0.049*
	Help-seeking	<i>4.86</i>	0.681	5.13	0.731	4.31	0.747	0.105

Note: *significant at $p \leq 0.05$; Values in bold indicate the highest, whereas those in italics indicate the second.

DISCUSSION

To the extent of our knowledge, this current study is the first to investigate self-regulated learning among Malaysian undergraduate nursing students. Previously in Malaysia, self-regulated learning has been investigated among preclinical medical students (7), first year undergraduate engineering students (8), science and social science undergraduates (9), second year engineering undergraduates (14), and undergraduate students attending worship camp (15). As per the findings of this study, it was determined that nursing students have the highest level in 8 (extrinsic goal orientation, control of learning beliefs, test anxiety, rehearsal, organization, critical thinking, peer learning, help-seeking) out of the 15 sub-domains compared to other learner populations.

Male students have better motivation for intrinsic goal orientation than females, which indicates that they pursue their nursing study due to their interest, which seeks challenge, curiosity, and mastery. This is in concordance with the nature of male on masculinity were to be dominant, thrill-seeking, and becoming provider or protector for the group (e.g., family) (16). In addition, male students may feel that they need to compete in the female-dominant profession, making them more internally motivated. The nursing profession requires frequent physical activity, which is where being male is of an advantage. However, this is different from Yusri et al. (17), where the female has better perceived every self-regulated domain investigated but supports that the male gender has a higher intrinsic goal orientation. Perhaps, it depends on the nature of academic learning where Yusri et al. (17) investigated language study. Language study is more passive, and the female gender appreciates such activities due to the feminist nature of sensitivity and meticulousness.

However, regarding strategy use, non-Bumiputera is better than Bumiputera. One reason is cultural influence, where Malay culture observes life from the balance of social duty (i.e., family, belief,

cultural obligation, sentiment). However, non-Bumiputera is more focused on individual success as a catalyst to serve the community. The non-Bumiputera believed they needed to work harder to prove their existence as they were perceived as a minority and competing with others (18, 19), perhaps making them feel comfortable working alone and thus become individualistic. The Malay and Bumiputera, as the majority, claim to enjoy certain privileges due to social status (18, 19), which perhaps makes them more interdependent and collective. Hence, the sociocultural aspect contributes to shaping the student's behavior.

Year of study contributes to intrinsic motivation (for motivation value), allocation time, and preparing the environment for study and effort. Looking first at the motivation aspect, first year and fourth year students exhibit higher values on intrinsic motivation. This finding maybe logical as first year students transition to university life and are eager about their study. Meanwhile, fourth year students look forward to complete their studies and graduate. In contrast, second year and third year students, who are in their middle years of study, may become jaded or bored, because of taking a number of university examinations (and perhaps get less score than expected), going into many classes, and subjects getting more difficult. When observing the learning strategies management, second year students have a significantly higher level of resources management as they have coronavirus disease 2019 (COVID-19) experience in the middle of the study. This has pushed the second year students to quickly adapt their learning style to prepare for the future as their study duration is still a long way to go. Therefore, they have developed learning style for both conventional and online. Study shows that the COVID-19 pandemic has interrupted usual learning, making the students dissatisfied and worried; in fact, prompt shift to online learning was deemed to be insufficient (20, 21). Compared to the seniors which perhaps maintained their usual learning style, fourth year students have less classroom study and are more involved in clinical placement, while for the third year transitioning to fourth year, they think less about theory learning. For the first year, they just began their university life and started to learn the culture and perhaps have not yet established any learning style.

Spending more time, preparing a more conducive learning environment for study, and putting more efforts to study were found to be strongly associated with academic achievement. These findings are expected and supported by a study from Rau and Durand (22), wherein they found that successful students in academics push themselves to work hard and are well-prepared to study more, such as doing revision and finding time as well as creating conducive environment to study. More intelligent individuals usually have high insight on self-reflection and more aware about their environment, thus making them more successful in identifying their own strength and limitation and can come out with contingency strategies to solve any particular issue—in this case, how to get better academic achievement (23).

Interestingly, household income can significantly affect students' motivation and learning strategies. It was found that students in the lowest income category are more determined to study. Perhaps, it is because the students realize that they are at disadvantage about their future and have been given the equal opportunity; therefore, they value, appreciate, and take maximum advantage of the opportunity to work hard as they perceived this is the only chance to change their status. Meanwhile, well-off students perhaps are too complacent as they think they have backup and something to rely on and have alternative routes if something undesired happens, at some point making them take for granted their studies. Middle-income students are better on resources management as they might have more time to focus on their study and worry less about the financial aspects. Meanwhile, the lower-income students perhaps need to do part-time jobs or search for side jobs for income to support their living, thus compromising their ability to give full attention to their studies. However, this study shows a different perspective to that of other international literature where the lower-income groups are usually underachievers in college (24). One reason is that Malaysia has programs for underprivileged students; for example, lower-income students are supported by the government with education loan, they can apply for other financial aid available, and they can go to subsidized public university for

lesser tuition fee; all of these were able to provide students some sort of security, minimizing their worries and relieving them from the burden of earning money to support their studies.

In comparison with previous studies (7, 8, 9, 14, 15), nursing students have demonstrated higher motivation levels than other disciplines. Again, the phenomenon may be explained by the nature of students who consider themselves an underprivileged group than other disciplines. Nursing is often regarded as a profession at a lower hierarchy among health professions (c.f., medical, dentistry, pharmacy). Thus, nursing students are more motivated to prove their abilities (25, 26). On the other hand, medical students demonstrate higher intrinsic goal orientation, task value, elaboration, and learning resources management (time and study environment and effort regulation) (7). For medical students with higher intrinsic goal orientation and task value motivations, perhaps it is denoted by the pride in the discipline itself (i.e., proud to be a medical student). In addition, medicine is a field involved in high autonomous decision-making and considered at professional level. This explains why medical students have higher level of learning strategies management than the nursing students, where nurses are regarded as technical and support staff (25, 26). The nature of local medical curriculum implements block system learning and division of preclinical and clinical years. Block system encourages frequent rehearsal (27, 28), and clinical learning encourages participative learning and independency (29). This explains the high level of independent learning and learning strategies management among medical students. However, nursing curriculum, as other courses, implemented traditional scheduling or semester-based system. Traditional scheduling was found to contribute better on academic achievement of students which explains why the self-regulated domains for learning strategies on cognitive are higher among non-medical students (27, 28).

In terms of learning strategies, self-regulation levels of healthcare students (this current study and Lee et al., (7) study) are found to be higher than non-healthcare students (8, 9, 14, 15) in all sub-domains except engineering students, who score higher in metacognition sub-domains (14). A possible explanation is that engineering degrees involve higher decision-making stakes than other disciplines (14). However, when comparing nursing and medical students, nursing students tend to be hardworking as a strategy, while medical students implement self-centric and self-awareness strategies. Perhaps, this can be attributed to the nature of the profession where nursing is considered the support service and involves more technical and labor-intensive tasks. In contrast, medicine is considered a professional category where they are more involved in decision-making, leadership, and management of people (30). A discipline's reputation and status can influence perceived social status in society (9). This perceived social status might have been pre-imposed in the societal culture in comparing different disciplines (e.g., sciences vs. social sciences; health vs. non-health; medical vs non-medical) where a particular discipline might be more intelligent, more challenging, complex, desirable, and prestigious than other disciplines.

Implication to practice

One aspect that allows students to improve their self-regulation is providing more opportunities to gain experiences and reflect on the learning processes, in the classroom or in clinical settings. Several models of self-regulation were developed (3); Kuiper's model is used in this current study as the model was developed for nursing education (6).

In this study, the mean values of several sub-domains are considered below par compared to a standard (13). This issue is consistent across Malaysian learner populations. One reason is due to the learning culture in the undergraduate study that is teacher-centric rather than student-centric, and primarily pedagogical rather than andragogical (21, 31). This indicates that there is room for improvement to elevate the self-regulation practices among nursing students. Educating nursing students to study strategically rather than just relying on hard work is essential. More importantly, it provides the students with high self-insight, self-awareness, and self-reflection. This concurs with

Kuiper and Pesut's (6) suggestions to focus on reflection. In Kuiper, the emphasis is on behavioral self-regulation, and self-monitoring is thus required. Learning approaches such as active learning is beneficial to improving students' motivation and regulation (32). The following strategies can be considered as presented in Table 4.

Table 4: Intervention strategies to enhance self-regulation on the sub-domains which are not achieving desirable level among nursing students

Sub-domain	Strategy	Reasoning
Metacognitive self-regulation	<ul style="list-style-type: none"> • Educate about self-regulation and self-regulated learning 	<ul style="list-style-type: none"> • Educate about the benefits of self-regulation. Provide an idea for the students on how to do self-regulation on themselves, what approach, and when to utilize the techniques. Constant critical reflection on own works is the key for self-regulation.
Time and study environment	<ul style="list-style-type: none"> • Allocate a brief period, perhaps at the end of each week, where the students can reflect on themselves and discuss with others. • Regular meeting when necessary to identify unique learning strategies customized according to individual. 	<ul style="list-style-type: none"> • Nursing students are considered busy with the highest clinical load among education programs while following the conventional semester-based system. Therefore, they need to have a bit of time and guidance from academic/advisor about how to do self-regulation, especially during the early study year. The guidance can be gradually eliminated. • Self-regulated learning requires rapid and regular exercise for self-monitoring, reflection, and trial performance. Therefore, providing these opportunities will create a norm for self-regulated learning.
Effort regulation	<ul style="list-style-type: none"> • Allow for assignment or assessments that nurture critical thinking and reflection. • Provide cohort-style assessment where the students can get feedback and improve the same task before being evaluated. 	<ul style="list-style-type: none"> • Critical thinking is an essential skill for students to "think about thinking." Therefore, active learning and student-centered or student-led assignment need to be considered. • Constant reflection is another essential skill to enhance insight and awareness about own strengths and weaknesses. • A one-off assignment has little merit for self-regulation as the assignment is completed and mark is directly given without the opportunity for revision. Usually, students are unable to relate as the feedback (mark) is delayed, the feedback is prescriptive, and the student cannot connect where the mistakes are. • Cohort-style assessment that allows for continuous work on the task is improving the work and teaches the student to do self-correction and self-improvement.
Help-seeking	<ul style="list-style-type: none"> • Develop more active learning for class activities. 	<ul style="list-style-type: none"> • Most classroom lectures implement didactic learning, which will reduce the ownership and disconnection of the students from the knowledge. Flipped classroom, game-based learning, and technology-enhanced simulation can be recommended. • Active learning will enhance students' appreciation of the knowledge they gain and empower them to be more self-confident and have higher self-esteem. Strategies such as team-based learning, problem-based learning, and group projects can be considered.

CONCLUSION

This study reported nursing students' preferred motivation values and learning strategies at one public university in Malaysia. In this study, we were able to identify several factors contributing to motivation and strategies, such as being a male, being a non-Bumiputera, years began and final year

of the academic program, and having higher academic achievement. However, household income can be considered a pertinent associated factor, where the lower-income bracket has better self-regulation than their highest income bracket counterparts. The nursing students' self-regulation is satisfactory compared to other disciplines; however, it can be further enhanced in several aspects, such as self-awareness and insight.

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