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Effectiveness of Psychological Skills Training and Motivational Counseling on the levels of Self-Efficacy, Self-Regulation, Anxiety and Skill Performance among nursing student: A Pilot RCT Feasibility Study

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Abstract: Introduction: Nursing students often face challenges such as low self-efficacy, poor self-regulation, and high anxiety, which impact their skill performance. This pilot study evaluates the feasibility of implementing Psychological Skills Training (PST) and Motivational Counseling (MC) interventions to enhance these parameters/outcome variables among first-year nursing students. **Methods:** A single-blinded randomized controlled trial with a mixed design was conducted on 30 nursing students, divided into three groups: PST (n = 10), MC (n = 10), and control (n = 10). Standardized tools, including GAD-7, GSE, and SSRQ, were employed to measure anxiety, self-efficacy, and self-regulation, respectively. Skill performance was assessed using a checklist for blood pressure measurement. Interventions spanned six weeks, with data collected pre and post-intervention. **Results:** The PST group shows significant reductions in anxiety ($p = 0.0048$) and improvements in self-regulation ($p = 0.0050$), while the MC group demonstrated significant gains in self-regulation ($p = 0.0076$) and skill performance ($p = 0.0077$). All groups showed significant improvements in self-efficacy. However, inter-group differences in self-efficacy, self-regulation, and skill performance were not significant. **Discussion:** PST effectively reduced anxiety and improved self-regulation, while MC enhanced self-regulation and skill performance. Findings support the feasibility of these interventions and research methodology for the future main study.

Index Terms **– Nursing students, Self-Efficacy, Self-Regulation, Anxiety, Skill performance, Counseling, Psychological Skills training.**

I. INTRODUCTION

Nursing students go through many process of rigorous academic learning to become professional nurses, so true for novice student like first-year nursing students. Many studies found that Self-efficacy, Self-Regulation and anxiety play an important role among nursing students and its impact on their skill performance. A survey done by **Flotte E** in 2023 found that higher academic self-efficacy was strongly associated with improved performance, particularly on exams emphasizing physiology, highlighting the importance of fostering self-efficacy in complex subject areas in nursing whereas students had indicated that various courses activities causes anxiety among them, demonstrating the need for understanding students anxiety. [1] A systematic review conducted by **Gueroni LPB et al**. in 2024, did a searches on 6 databases among 10 selected studies and found out that the intervention programs content were mostly positive mental health, psychoeducational strategies and homework assignments for enhancing general self-efficacy among college going students. [2] **Valenzuela R et al.** in 2020, explained that Self-regulation includes self-motivation (i.e., goal setting, learning from mistakes) and volitional regulation (i.e., strategic decision making). Their studies on 994 young university students using Short Spanish Self-Regulation Questionnaire, and revealed that 1) more perseverant students may remain more aware of their goals, preventing them from slipping into irrational implemental, 2) delays decisional procrastination (and its contribution to implemental delay and lateness) may be prevented via strategic decision-making skills, which could be improved consciously. [3] The present pilot study interventions included such strategies in its programs suggested in above two studies. **Al-Ghareeb A, McKenna L, and Cooper S.** in 2019 conducted a study to investigate physiological and psychological anxiety during simulated clinical performance and result revealed that students' psychological anxiety was high pre-simulation and remained high post-simulation while students physiological anxiety was high at pre-simulation later, reduce with gained familiarly with the simulation environment ($p < .007$). [4] The present pilot study focus on

psychological approaches i.e. Psychological Skills Training (PST) and Motivational Counseling (MC) for reducing anxiety while enhancing self-efficacy, self-regulation and skill performance among novice nursing students. The main objectives for conducting the present pilot RCT study were 1) to assess the feasibility of the future main randomized controlled trial. 2) To become familiar with the research methodology. 3) To report finding of tool content validity and its reliability. This pilot study helped to become familiar with the use of the tools, its shortcoming, if any arise during the pilot study and also to find out any difficulties in conducting the main study beforehand. It was the trial run of a mini-size study before the main study in a different population with similar characteristics.

II. METHODOLOGY

A single blinded mixed Randomized controlled Trial was adopted with concurrent embedded mixed design in a single site. Primary research design was RCT and embedded within it was qualitative research design. Sample size was 30 nursing students from semester 2 and selected as per eligibility criteria. Using online computer generated random number sequence, 30 participants were selected and post-random consent were taken. SNOSE (Sequentially Numbered Opaque Seal Enveloped) as allocation concealment technique were employed for allocation into three arm trial, 10 participants in intervention group A (PST), 10 participants in intervention group B (MC) and 10 participants in control group C. The pilot study was initiated from 27/01/2023 to 06/03/2023. The Psychological Skills Training and Motivational counseling were the two interventions employed and implemented as per research protocols.

Content validity: A total of 17 experts validated the tools. The tools were standardized tools i.e. GAD-7 with 7 items, GSE scale with 10 items, SSRQ with 31 items for assessing anxiety, self-efficacy and self-regulation respectively. The investigator developed and structured demographic profile sections and skill performance checklist for blood pressure measurement, modification were made as per expert validators resulting in change of demographic section having 11 items and skill performance checklist modification from 31 items to 23 items. Expert suggestions and modifications were incorporated for tools for pilot data collection. Qualitative interviewing 3 guiding questions were added with another additional questions leading to a total 4 questions overall. Content validity ratio were calculated and all standardized tools had CVR = 1, concluding that all items were valid.

Reliability of the tools was tested using Cronbach's alpha. The reliability coefficient Cronbach's α, as **Dhira TA.**, 2021 for the overall GAD-7 scale was 0.895, greater than the recommended value of 0.80 suggesting excellent reliability. The covariance between the two factors in GAD-7 was extremely high (0.931). [5] As per **Schwarzer R. & Jerusalem M.**, 1995, internal reliability for GSE = Cronbach's alphas between 0.76 and 0.90. [6] SSRQ was the shorter version with 31 items from the original 63 items in a psychometric properties research conducted by **Carey K et al** in 2004 and 2005. [7] For the present pilot study, reliability was tested with Cronbach's alpha = 0.776 for GAD-7 (7 items), Cronbach's alpha = 0.757 for GSE (10 items), Cronbach's alpha = 0.732 for SSRQ (31 items), Cronbach's alpha = 0.774 (23 items) and all were consider acceptable for employing as data collection tools. Calibrated sphygmomanometer with dual head pieces stethoscope were used as equipment's for blood pressure measurement conducted on healthy nursing students, assess by blinded assessors.

III. Results findings: The pilot study findings were given in tables and graph with interpretation as follows.

Table 1. Frequency and percentage distribution of demographic characteristics of nursing students.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

Demo profile items		Control group C	PST group A	MC group B	Total	%
Age						
1.1	18 - 19	**1**	**4**	**2**	**7**	23.33
1.2	19.1- 21	**8**	**5**	**8**	**21**	70
1.3	21.1 - 23	**1**	**1**	**0**	**2**	6.67
1.4	Above 23	**0**	**0**	**0**	**0**	0
Gender						
2.1	Male	**0**	**0**	**0**	**0**	0
2.2	Female	**10**	**10**	**10**	**30**	100
2.3	Third Gender	**0**	**0**	**0**	**0**	0
Type of family						
3.1	Nuclear	**7**	**7**	**9**	**23**	76.66
3.2	Joint	**3**	**3**	**1**	**7**	23.33
3.3	Extended	**0**	**0**	**0**	**0**	0
3.4	Other (specify)	**0**	**0**	**0**	**0**	0
Marital status						

4.1	Single	**9**	**10**	**10**	**29**	96.66
4.2	Married	**1**	**0**	**0**	**1**	3.33
4.3	Divorce	**0**	**0**	**0**	**0**	0
4.4	Separated	**0**	**0**	**0**	**0**	0
Father education						
5.1	Illiterate	**0**	**0**	**0**	**0**	0
5.2	Primary education below 10th	**2**	**2**	**2**	**6**	20
5.3	Secondary education	**4**	**7**	**4**	**15**	50
5.4	Diploma	**1**	**0**	**1**	**2**	6.66
5.5	Undergraduate	**1**	**1**	**3**	**5**	16.66
5.6	PG	**2**	**0**	**0**	**2**	6.66
5.7	Other (specify)	**0**	**0**	**0**	**0**	0
Mother Education						
6.1	Illiterate	**0**	**0**	**1**	**1**	3.33
6.2	Primary education below 10th	**7**	**5**	**5**	**17**	56.66
6.3	Secondary education	**1**	**3**	**2**	**6**	20
6.4	Diploma	**0**	**1**	**0**	**1**	3.33
6.5	Undergraduate	**2**	**1**	**0**	**3**	10
6.7	PG	**0**	**0**	**2**	**2**	6.66
6.8	Other (specify)	**0**	**0**	**0**	**0**	0
Number of sibling						
7.1	One	**2**	**7**	**3**	**12**	40
7.2	Two	**5**	**3**	**7**	**15**	50
7.3	Three	**2**	**0**	**0**	**2**	6.66
7.4	More than three	**1**	**0**	**0**	**1**	3.33
Birth order						
8.1	First order	**8**	**8**	**6**	**22**	73.33
8.2	Second order	**2**	**2**	**3**	**7**	23.33
8.3	Third order	**0**	**0**	**1**	**1**	3.33
8.4	Last order	**0**	**0**	**0**	**0**	0
8.5	Others (specify)	**0**	**0**	**0**	**0**	0
Annual Income						
9.1	Below Rs.50,000/-	**3**	**4**	**1**	**8**	**26.66**
9.2	Rs.50,001/- to Rs.10,0000/-	**6**	**4**	**5**	**15**	50
9.3	Rs.10,0001/- to Rs. 20,0000/-	**0**	**0**	**0**	**0**	0
9.4	Rs. 20,0001/- to Rs. 30,0000/-	**0**	**0**	**2**	**2**	6.66
9.5	More than Rs. 30,0000/-	**1**	**2**	**2**	**5**	16.66
Financial support received						
10.1	Self-support	**1**	**0**	**0**	**1**	3.33
10.2	Only parent	**1**	**4**	**4**	**9**	30
10.3	Relatives	**0**	**0**	**0**	**0**	0
10.4	Scholarship from Government sector	**8**	**3**	**3**	**14**	**46.66**
10.5	Scholarships from Private sector	**3**	**6**	**3**	**12**	**40**
10.6	Scholarships from the institution	0	0	0	**0**	0
Duration of practical						
11.1	Less than 40 hours	0	0	0	**0**	0
11.2	Between 41 to 80 hours	0	0	0	**0**	0
11.3	Between 81 to 120 hours	0	0	0	**0**	0
11.4	More than 120 hours	**10**	**10**	**10**	**30**	**100**

Foot note: n_1 is sample size of group A, n_2 is sample size of group B and n_3 is sample size of control group C.

Results: The Table 1 show the demographic characteristics of the sample population. Majority (70%) of nursing student's age were from 19 to 21 years of age with 100% female population. Majority (76.67%) of them belong to nuclear families with annual income (50%) between Rs. 50000 to Rs.100000. A majority of nursing students had government scholarship (46.66%) and private scholarship (40%), i.e. a total of 86.66% of scholarship support for them. All participant had more than 120 hours of clinical practice or simulation (Table no. 1.) Similar finding was found in a study conducted by **Gaur R et al in 2020**, their study on nursing students' demographic background analysis shows that among nursing students in the total sample of 394, a first-year nursing student was 104, majority of the first-year nursing student belonged to the age group of 17 to 19 (82.5%) and 19 to 21 (27.1), in gender aspect, both genders were similar in proportion (female 25.1% and male 27.9%). [8]

Table 2. Mean difference and comparison within group for the variable outcome anxiety among nursing students in group A, B and C.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

	Anxiety	Mean	Median	SD	SE	Wilcoxon W	p-value	% Change	Result
Group A (PST)	Pre	10.50	10.00	4.53	1.43	-2.823[b]	**0.0048**	68.57	Sig
	Post	3.30	3.50	2.16	0.68				
Group B (MC)	Pre	8.40	7.00	3.86	1.22	-1.904[b]	0.0569	20.24	NS
	Post	6.70	7.00	2.45	0.78				
Group C Control	Pre	10.10	10.50	4.23	1.34	-0.298[b]	0.7655	-3.96	NS
	Post	10.50	10.00	3.98	1.26				

As the sample size was small, the Wilcoxon Signed Rank Test (Z) was carried out to test the significance within Group A, Group B, and Group C for Anxiety as shown in Table 2. The p-value for Group A was less than 0.05 (Z = -2.823b, p-value = 0.0048). P-Value for Group B was greater than 0.05 (Z = -1.904b, p-value = 0.0569) p-value for Group C was also greater than 0.05 (Z = -0.298b, p-value = 0.7655). Hence, it was concluded that there was a significant change observed in Group A, but no significant change observed in Group B and Group C for the Anxiety as a dependent/ outcome variable. So it can be said that psychological skills training (PST) was effective in reducing Anxiety among the participants. As per a study conducted by **Elbe A-M, Szymanski B, and Beckmann J in 2016**, on the effects of a psychological skill training program on Anxiety levels in 24 top karate athletes. The experiment group had lower cognitive Anxiety in Post-intervention than in Pre-intervention ($p < 0.01$). The same group also had a lower level of cognitive Anxiety than control in Post-intervention ($p < 0.05$). [9]

Table 3. Mean difference and comparison within group for the variable outcome self-efficacy among nursing students in group A, B and C.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

Self-Efficacy		Mean	Median	SD	SE	Wilcoxon W	p-value	% Change	Result
Group A (PST)	Pre	29.70	29.50	4.57	1.45	-2.552[c]	**0.0107**	13.80	Sig
	Post	33.80	34.00	3.65	1.15				
Group B (MC)	Pre	30.20	31.00	2.15	0.68	-2.680[c]	**0.0074**	11.92	Sig
	Post	33.80	34.00	2.49	0.79				
Group C Control	Pre	29.60	29.50	3.98	1.26	-2.409[b]	**0.0160**	10.81	Sig
	Post	32.80	33.00	1.75	0.55				

The Wilcoxon Signed Rank Test was used to assess the significance of the level of general self-efficacy within Groups A, B, and C as shown in Table 3. There was a significant difference found in all three groups, Group A (Z = -2.552c, p-value = 0.0107), Group B (Z = -2.680c, p-value = 0.0074), and Control Group C (Z = -2.409b, p-value = 0.0160), which were all less than 0.05. As a result, it was concluded that there were substantial changes in Groups A and B, as well as a significant change in Group C, implying that self-efficacy improved for all groups. **Heydari et al. (2020)** explore the impact of psychological skills training (PST) on self-confidence among adolescent volleyball players, revealing significant improvements in both state and trait self-confidence. The study involved a control group and an experimental group that underwent a comprehensive 24-session PST program, including goal setting, positive self-talk, and imagery. The findings indicated that the PST program had a significant effect on enhancing self-confidence, with statistical significance ($p < 0.05$) noted before and after the intervention. [10] The pilot study also employed goal setting and imagery as part of PST intervention.

Table 4. Mean difference and comparison within group for the variable outcome self-regulation among nursing students in group A, B and C.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

Self-Regulation		Mean	Median	SD	SE	Wilcoxon W	P-Value	% Change	Result
Group A (PST)	Pre	108.80	110.00	9.67	3.06	-2.807[c]	**0.0050**	12.22	Sig
	Post	122.10	121.00	8.50	2.69				
Group B (MC)	Pre	111.30	113.50	8.83	2.79	-2.670[c]	**0.0076**	6.83	Sig
	Post	118.90	118.50	7.37	2.33				
Group C Control	Pre	105.40	106.50	12.37	3.91	-1.540[b]	0.1235	4.74	NS
	Post	110.40	110.00	10.24	3.24				

The Wilcoxon Signed Rank Test was used to determine significance in Groups A, B, and C for self-regulation within the group as shown in Table 4. The p-value for Group A was less than 0.05 (Z = -2.807c, p-value = 0.0050), indicating that PST improved self-regulation in the post-test. The p-value for Group B was less than 0.05 (Z = -2.670c, p-value = 0.0076), indicating that motivational counseling (MC) improved participants' self-regulation. However, the p-value for Group C exceeded 0.05. As a result of the PST and MC interventions, significant changes were observed in Groups A and B, while no meaningful change was observed in Group C.

Table 5. Mean difference and comparison within group for the variable outcome skill performance among nursing students in group A, B and C.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

Skill Performance		Mean	Median	SD	SE	Wilcoxon W	p-value	% Change	Result
Group A (PST)	Pre	27.40	28.50	11.59	3.66	-1.899[c]	0.0576	33.58	NS
	Post	36.60	36.00	5.91	1.87				
Group B (MC)	Pre	24.20	23.50	6.37	2.02	-2.666[c]	**0.0077**	62.81	Sig
	Post	39.40	40.00	6.74	2.13				
Group C Control	Pre	23.70	23.50	5.23	1.65	-2.507[b]	**0.0122**	43.88	Sig
	Post	34.10	36.00	4.77	1.51				

The Wilcoxon Signed Rank Test was used to determine significance in Groups A, B, and C for Skill Performance as shown in Table 5. The p-value for Group A exceeded 0.05 (Z = -1.899c, p-value = 0.0576). The p-value for Group B was less than 0.05 (Z = -2.666c, p-value = 0.0077). The p-value for Group C was less than 0.05 (Z = -2.507b, p = 0.0122). As a result, it was determined that Group A showed no substantial change, although Groups B and C did.

Table 6. Comparison between groups for the variable outcome anxiety, self-efficacy, self-regulation and skill performance among nursing students for group A, B and C.

N = 30, n_1 = 10, n_2 = 10, n_3 = 10

Outcome Variable	Group	N	Mean Rank	Sum of Ranks	Kruskal Wallis	p-value
Anxiety	Group A	10	24.40	244	16.598	**0.0002**
	Group B	10	13.15	131.5		
	Group C	10	8.95	89.5		
	Total	30				
Self-Efficacy	Group A	10	16.60	166	0.529	0.7677
	Group B	10	16.00	160		
	Group C	10	13.90	139		
	Total	30				
Self-Regulation	Group A	10	20.40	204	5.205	0.0741
	Group B	10	14.50	145		
	Group C	10	11.60	116		
	Total	30				
Skill performance	Group A	10	13.25	132.5	2.705	0.2586
	Group B	10	19.20	192		
	Group C	10	14.05	140.5		
	Total	30				

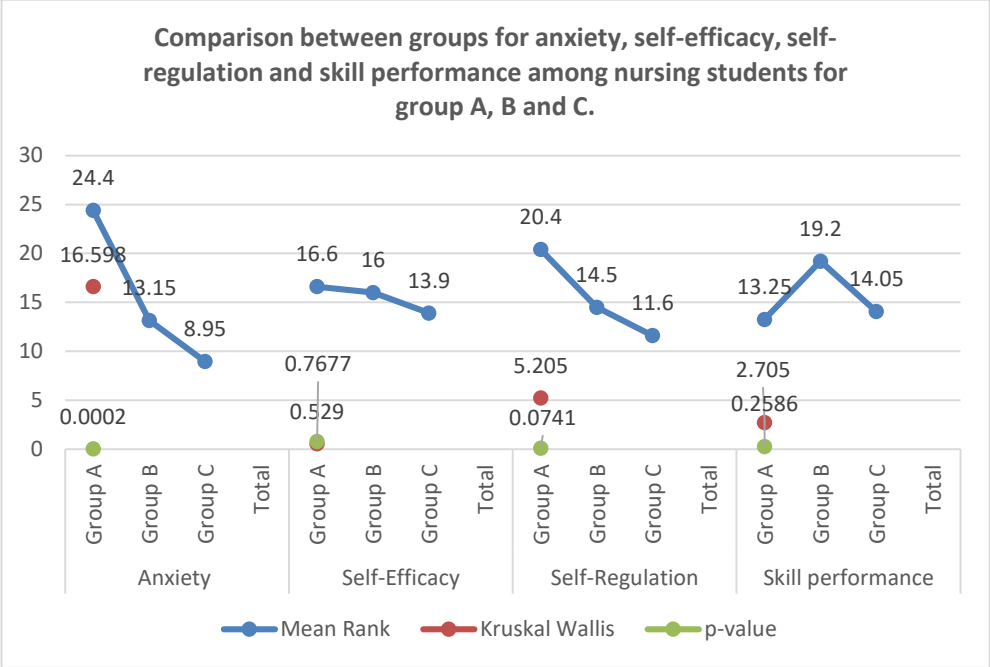

Figure 1. Comparison between group A.B and C for all outcome variables.

The Kruskal-Wallis Test (H) was used to compare Groups A, B, and C. The above Table 6 and figure 1 shows the result analysis and the findings revealed that p-value was less than 0.05 for groups A, B, and C for Anxiety (H = 16.598, p-value = 0.0002), but for almost all parameters, p-value were greater than 0.05 for Self-Efficacy (H = 0.529, p = 0.7677), Self-Regulation (H = 5.205, p value = 0.0741), and Skill Performance (H = 2.705, p-value = 0.2586). Hence, it can be stated that there was a significant difference observed among three groups for Anxiety as an impact of PST and MC but there was no significant difference detected among three groups for Self-Efficacy, Self-Regulation and Skill Performance. Qualitative research analysis demonstrates that participants' answers to intervention reflect findings linked to themes such as increased emotional regulation, stress management, and performance found similarly in both groups A and B.

IV. **Discussion and conclusion**: The pilot study concluded that psychological skills training (PST) effectively reduced anxiety and improved self-regulation, while motivational counseling (MC) also enhanced self-regulation and skill performance. Both interventions demonstrated positive impacts on self-efficacy across groups. However, no significant differences in self-efficacy, self-regulation, or skill performance were observed between the three groups. Anxiety reduction was most notable in Group A, highlighting the specific benefits of PST. Qualitative findings supported these results, emphasizing improved emotional regulation, stress management, and performance in participants from Groups A and B.

Feasibility finding: While conducting the pilot study, practical concerns of research were noted such as availability of resources and material, time taken for collecting pre-test and post-test, concerns related to assessors, its blinding protocol, time suitability for intervention in a face-to-face group session and online group session for practice were noted as an important factor. The various responses of participants also helped to gain investigator insight, experience the process, and learn through this mini-trial run. It was found that all resources were manageable and the assessors had found their training effective for collecting data. The intervention sessions were feasible with proper time scheduling. Permission and communication beforehand with authority for setting arrangements etc. need to be thought of beforehand. Using Google Meet for online supervision was found to be feasible for participants as well as the investigator. A WhatsApp group was formed for each group separately for communication purposes and it was successfully coordinated. Hence, it would be used for the main study. Regarding the sampling technique approach, multistage sampling and multi-centric approach would be suitable to enhanced more robust and rigor in methodology. Hence, after the pilot study trial run, it was concluded that the study was feasible to conduct for the main study.

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Data sharing statement: No further data are available.

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