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OPEN PEER REVIEW

The Effects of Mobile Learning and Group Discussion for Psychotropic Drug Education on Nursing Students' Learning, Satisfaction, and Attitude: An Educational Intervention

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About this report

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1 Original submission

1 comment · 1 Jul 2023

Associate Editor

MAJOR REVISION 1 Jul 2023

ABSTRACT
Write keywords based on MESH.
BACKGROUND
1- The text in Line 33-35 is not clear; please correct it.
"Clinical education is a basic component of medical sciences education without which nurturing qualified individuals would be difficult and even impossible
"

2- One of the main and routine tasks of nurses is to give medicine, and nurses must have knowledge about medicines. This sentence implies that giving medicine has recently become part of the duties of nurses or is going to be. The reason is that your references regarding this sentence are old. (line 42-43)

"Moreover, due to the ever-increasing complexity of health and treatment and emergence of new roles for nurses, they have to be trained in pharmacology, as well"

3- The background is not coherent enough; you should write about the importance of teaching psychiatric drugs to nursing students. Most of the effects of drugs are mentioned, which is not necessary.

4- In the background, clearly state the necessity of conducting the present research.
METHOD
1- How did you control this?
“lack of possibility to install the prepared application on mobile phones”
2- What method of randomization did you use?

3- The statistical method needs to be modified.
3- “signing written informed consents” It is enough to write this in the ethical considerations.
Discussion

The text in Line 234 is not clear: “for example, one reported no significant differences between the two study groups with respect to learning scores”

Reference
1- There are many old references; please use newer ones.
2- The format of the references needs to be revised, for example, reference numbers 9, 10, 14 and 15…

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Response to Reviewers:

Dear Reviewers and Associate Editors

Thank you for taking the time to review our work and provide valuable feedback. We appreciate your comments which undoubtedly improved the quality of our manuscript. We address your suggestions point by point and highlighted them in the manuscript accordingly. For respected reviewer 1 we highlighted the corrections in yellow. For the second respected reviewer the highlights are blue. For Those comments which were common between two respected reviewers we use green highlights.

Associate Editor 1:

ABSTRACT
Write keywords based on MESH.

Thank you for the comment. We rechecked the keywords based on MeSH.

Keywords: Mobile Learning, Group Discussion, Psychotropic Drugs

BACKGROUND
1- Line 33-35 not clear, please correct it
"Clinical education is a basic component of medical sciences education without which nurturing qualified individuals would be difficult and even impossible"

Thank you for the comment. We changed the sentence as follows:

Clinical education is a fundamental and important part of education in medical sciences, without which training efficient and competent people will be very difficult or impossible.

2- One of the main and routine tasks of nurses is to give medicine and necessarily have knowledge about medicines. From this sentence, it is understood that giving medicine has recently become part of the duties of nurses or is going to be. And the reason is that your references regarding this sentence are old. (line 42-43)
"Moreover, due to the ever-increasing complexity of health and treatment and emergence of new roles for nurses, they have to be trained in pharmacology, as well"

Thank you for the comment. That old references are deleted.

3- Background is not coherent enough, you should write the importance of teaching psychiatric drugs to nursing students. Most of the effects of drugs are mentioned, which is not necessary.

4-in background clearly write the necessity of conducting the present research.

Thank you for the comments. The importance of teaching psychiatric drugs to nursing students and the necessity of conducting the present research are added. So the paragraph changed as follows:

Students have also pointed out their weakness in pharmacology courses (5).

In psychiatry departments, the goal of drug therapy in mental patients is to try to moderate or reduce pathological behavior, thoughts and mood. These drugs directly affect a person's behavior and performance. Each category of psychiatric drugs has other uses in addition to the main use (6, 7). Therefore, due to the increasing complexity and wide range of treatment options of these drugs, the treatment team must be aware of potential side effects, drug interactions and how to treat unwanted consequences. Considering the unpredictability of drug responses, the frequent occurrence of side effects, and patients' doubts about taking drugs, a strong relationship between the treatment team and the patient is needed (8). Therefore, paying attention to the educational needs of nurses working in psychiatry departments is an effective and important step in improving their abilities. Familiarity with and management of drugs side-effects are among nurses' main educational needs with respect to pharmacological care in psychiatry departments (9).

METHOD
1- How did you control this?
"lack of possibility to install the prepared application on mobile phones"

Thank you for the comment. We correct the sentence with more explanations as follows:

The exclusion criteria were not taking part in group discussion sessions. Students whose phone system were not Android could not install the software and were removed from the group.

2- What method of randomization did you use?

We appreciate the reviewer's feedback and acknowledge their concern regarding the clarity of our method and process of random allocation. To ensure unbiased group assignment, we employed a simple random allocation procedure using the table of random numbers. This method involves assigning participants to different groups purely by chance, minimizing any potential selection bias. This method is mentioned in the manuscript as follows:

From 40 students who had taken mental health apprenticeship in psychiatry ward, 28 students had inclusion criteria and were assigned to two groups of 16 and 12 students in mobile learning and discussion groups respectively, using simple randomization and the table of random numbers (Figure 1).

3- The statistical method needs to be modified

This section was revised according to your valuable comment.

Data were entered into the SPSS statistical software, version 16. The qualitative and quantitative data are reported as frequency (percentage) and mean ± standard deviation, respectively. Furthermore, between and within group differences were compared using independent sample t-test and paired t-test, respectively. Because of small sample size (<20 in each group), Hedges' g was also calculated for between study comparisons as effect size. $P<0.05$ was considered to be statistically significant.

3- signing written informed consents" It is enough to write in ethical considerations

Thank you for the comment. It is rewritten based on the comment.

Ethical considerations

The approval code of the Ethics Committee of Shiraz University of Medical Sciences is (code: 95-01-08-13957). Students signed written informed consents.

The control group students were provided with the educational software content after the end of the study.

Discussion

Line 234 not clear," for example, one reported no significant differences between the two study groups with respect to learning scores"

Thank you for the comment. It is rewritten based on the comment as follows:

Zarshenas *et al*. reported no significant differences in learning scores between interactive multimedia method and educational booklet (23).

Reference
1-There are many old references, please use newer ones.
2- The format of the references needs to be revised, for example reference number 9, 10, 14 and 15....

Thank you for the comments. We omitted all old references and rechecked all format of the references.

Associate Editor 2:

1. Please revise "quantitative and qualitative tables".

All tables were revised according to your valuable comment.

2. Report mean± SD in the abstract and remove "Hedges's g= 0.80, 95%CI; 0.02-1.54".

Thank you for your valuable and helpful comment. The mean ± SD was added and the Hedges's was removed. The revised sentence is as follows:

The results revealed a significant difference between two groups' satisfaction after the intervention (38.44 ± 8.01 in the mobile learning *vs*. 32.75 ± 5.28 in the group discussion groups, P=0.04).

3. The sample size calculation was performed for which variable?

4. Given information about the sample size calculation are not adequate. Report mean± SD in each group.

6. Revise the sample size formula.

Thank you for your thoughtful comment. The sample size calculation is now exactly reported in the revised manuscript. The revised sentence is as follows:

The G-Power software was used to calculate the sample size. In according to satisfaction variable [mean (SD)1= 115.56 (17.57) and mean (SD)2= 132.24 (17.92)] in a previous study (22) and considering α=0.05, power=80%,, a 40-subject sample size was determined for the study (20 subjects in each group).

5. N=20 in each group is required? So 16/12 is not acceptable.

We appreciate your feedback and would like to address your concerns. Initially, we calculated the sample size for our trial based on certain assumptions and considerations. However, due to various practical constraints such as difficulties in patient recruitment, we were unable to enroll the exact number of patients as initially calculated. Despite enrolling a lower number of students than initially planned, we conducted a post hoc power analysis to assess the statistical power of our study. This analysis allows us to determine whether our sample size is sufficient to detect meaningful effects or differences between groups.

While it is ideal to enroll the exact calculated sample size, practical limitations sometimes necessitate adjustments. We acknowledge that a larger sample size would have provided more robust results and increased precision, as is mentioned in the limitations. However, given the circumstances and resources available, we believe that our study still provides valuable insights into this topic.

7. For each tool, report the CVI and CVR of the Persian version with reference.

7. We edited the manuscript and added the information regarding reliability and validity of the used questionnaires (all data that were reported in the origin reference).

Thank you for the comments these references rechecked based on your valuable comment.

The reliability of the questionnaire was approved by Cronbach's alpha = 0.90. Additionally, its validity was confirmed by factor analysis (22).

Accordingly, the content validity index was 0.85. Moreover, the reliability of the questionnaire was found to be 0.9 using the test-retest method (23).

8. The method and process of random allocation is not clear.

We appreciate the reviewer's feedback and acknowledge their concern regarding the clarity of our method and process of random allocation. To ensure unbiased group assignment, we employed a simple random allocation procedure using the table of random numbers. This method involves assigning participants to different groups purely by chance, minimizing any potential selection bias. This method is mentioned in the manuscript as follows:

From 40 students who had taken mental health apprenticeship in psychiatry ward, 28 students had inclusion criteria and were assigned to two groups of 16 and 12 students in mobile learning and discussion groups respectively, using simple randomization and the table of random numbers (Figure 1).

9. The rate of participation was 6.2% in the mobile learning group!?

We apologize for this incorrect value. The rate of participation in research activities were 67% in the discussion group and 75% in the mobile learning group (p=0.69), which was corrected in the revised manuscript.

10. Report the mean± SD of satisfaction in each group before and after the intervention.

Thank you for your thoughtful comment. We added the mean ± SD related to satisfaction score in each group in the revised manuscript.

The results of paired t-test revealed a significant within study difference in the discussion group's scores of satisfactions with the instruction method before and after the intervention (29.25 ± 6.80 *vs*. 32.75 ± 5.28, P=0.02). The results also indicated that the mobile learning group's score of satisfaction with the instruction method increased significantly after the intervention compared to baseline intervention (31.56 ± 6.08 *vs*. 38.44 ± 8.01, P=0.02).

11. Report the mean± SD of the students' attitude scores in each group before and after the intervention.

Thank you for your thoughtful comment. We added the mean ± SD related to attitude score in the revised manuscript (as we have mentioned in the manuscript, we wanted to assess attitude towards mobile learning only in the intervention group).

The results of paired t-test also revealed a significant difference in the students' attitude scores before (46.38 ± 10.31) and after (52.13 ± 8.43) education using mobile phone (P=0.038) (Table 5).

12. In Table 4, use ANCOVA to compare post-test values.

Thank you for your thoughtful comment. We conducted between-group comparisons using independent t-test. However, since there were no significant differences in the demographic variables and baseline values of outcomes, we did not perform any adjustments.

13. Reported P-value in Table 5 is wrong.

We apologize for this incorrect value. The P-value was corrected in the revised manuscript.

2 Revision 1

0 comments

No public comments in this round.

3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Reviewers and Associate Editors,

Thank you for taking the time to review our work and provide valuable feedback. We appreciate your comments which undoubtedly improved the quality of our manuscript. We addressed your suggestions point by point and highlighted them in the manuscript accordingly.

Associate Editor 1:

- Please explain the randomization process clearly.

We appreciate the editor's feedback and acknowledge your concern regarding the clarity of randomization. To ensure unbiased group assignment, we employed a simple random allocation procedure using the table of random numbers. This method involves assigning participants to different groups purely by chance, minimizing any potential selection bias. This method is mentioned in the manuscript as follows: (Pages 5-6)

From 40 students who had taken mental health apprenticeship in psychiatry ward, 28 students had had inclusion criteria and were assigned to two groups of 16 and 12 students in mobile learning (intervention group) and discussion (control group) respectively, using simple randomization and the table of random numbers (Figure 1). To conceal randomization, 28 opaque envelopes were numbered and given to the research assistant. Each envelope was opened at the time of the students visit and was used to assign the subject to pre-defined groups. All students in both groups were completely blinded to the group allocations, including the researcher assistant, who divided the participants into groups based on the envelope numbers, and the researchers who filled out the questionnaires.

Reviewer 1:

1. Please revise “quantitative and qualitative tables” in the abstract.

The sentence was revised according to your valuable comment. (Page 1)

Data was analyzed using paired and independent sample t-tests.

2. N=20 in each group is required? So 16/12 is not acceptable.

We appreciate your feedback and would like to address your concerns. Initially, we calculated the sample size for our trial based on certain assumptions and considerations. However, due to various practical constraints such as difficulties in students recruitment, we were unable to enroll the exact number of nursing students as initially calculated. Despite enrolling a lower number of students than initially planned, we conducted a post hoc power analysis to assess the statistical power of our study. This analysis allows us to determine whether our sample size is sufficient to detect meaningful effects or differences between groups.

While it is ideal to enroll the exact calculated sample size, practical limitations sometimes necessitate adjustments. We acknowledge that a larger sample size would have provided more robust results and increased precision, as is mentioned in the limitations. However, given the circumstances and resources available, we believe that our study still provides valuable insights into this topic.

We added this description to the limitation section of the revised version of manuscript: (Pages: 14-15)

Another study limitation was its small sample size. Initially, we calculated the sample size for our trial based on certain assumptions and considerations. However, due to various practical constraints such as difficulties in nursing students' recruitment, we were unable to enroll the exact number of students as initially calculated. Despite enrolling a lower number of students than initially planned, we conducted a post hoc power analysis to assess the statistical power of

our study (43%-65%). Therefore, a larger sample size in future studies would have provided more robust results and increased precision.

3. For each tool, report the CVI and CVR of the Persian version with reference.

We edited the manuscript and added the information regarding reliability and validity of the used questionnaires (all data that were reported in the origin reference) *unfortunately CVI and CVR did not reported by authors* . (Pages: 6-7)

Students learning scale was designed by researchers with 20 Items, according to the main goals of learning questionnaire assessing the rate of learning of psychotropic drugs, including antipsychotics, anti-anxiety drugs, antidepressants, and mood stabilizers. Each question had one score and a total was twenty. Face validity of this questionnaire was assessed by 5 experts. The reliability of this questionnaire was assessed in a random sample, and the Cronbach's alpha was 0.75.

The questionnaire assessing the students' attitude towards mobile learning was designed by Naderi et al. in form of a test containing 13 items. The items were responded via a 5-point Likert scale with the following options: completely agree (5), agree (4), no idea (3), disagree (2), and completely disagree (1). The reliability of the questionnaire was approved by Cronbach's alpha = 0.90. Additionally, its validity was confirmed by factor analysis (22).

The students' satisfaction with the instruction methods was evaluated using a questionnaire consisted of 16 items responded through a 3-option Likert scale (completely, to some extent, never), ranging from 1 to 3. Thus, the minimum and maximum scores of the questionnaire were 16 and 48, respectively. The face and content validity of the questionnaire were assessed by 15 experts using Waltz and Bausell's index and the required modifications were applied. Accordingly, the content validity index was 0.85. Moreover, the reliability of the questionnaire was found to be 0.9 using the test-retest method (23).

4. The method and process of random allocation is not clear.

We appreciate the reviewer's feedback and acknowledge their concern regarding the clarity of our method and process of random allocation. To ensure unbiased group assignment, we employed a simple random allocation procedure using the table of random numbers. This method involves assigning participants to different groups purely by chance, minimizing any potential selection bias. This method is mentioned in the manuscript as follows: (Pages 5-6)

From 40 students who had taken mental health apprenticeship in psychiatry ward, 28 students had inclusion criteria and were assigned to two groups of 16 and 12 students in mobile learning (intervention group) and discussion (control group) respectively, using simple randomization and the table of random numbers (Figure 1). To conceal randomization, 28 opaque envelopes were numbered and given to the research assistant. Each envelope was opened at the time of the students visit and was used to assign the subject to pre-defined groups. All students in both groups were completely blinded to the group allocations, including the researcher assistant, who divided the participants into groups based on the envelope numbers, and the researchers who filled out the questionnaires.

5. In Table 4, use ANCOVA to compare post-test values.

Thank you for your thoughtful comment. We conducted between-group comparisons using independent t-test. However, since there were no significant differences in the demographic variables (P>0.05) and baseline values of outcomes (P=0.35), we did not perform any adjustments.

We added this description to the revised version of the manuscript, as follows: (Page 10)

Since there were no significant differences in the demographic variables and baseline values of outcome between groups (P=0.35), we did not perform any adjustments.

3 Revision 2

0 comments

No public comments in this round.

4

Revision 3

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Reviewers and Associate Editors

Thank you for taking the time to review our work and provide valuable feedback. We appreciate your comments which undoubtedly improved the quality of our manuscript. We addressed your suggestions point by point and highlighted them in the manuscript accordingly.

1. Please revise the sample size calculation to justify your sample.

Thank you for your comment. We rechecked the sample size calculation in the revised manuscript as below:

Sample size

The G-Power software version 3.1.9.4, was used to calculate the sample size. In according to satisfaction variable [mean $(SD)_1$= 115.56 (17.57) and mean $(SD)_2$= 132.24 (17.92)] in a previous study (21) and considering α=0.05, power=80%, and considering t-test for difference between two independent groups' mean, a large effect size, two tails p-value and allocation ratio: 1/1, a 42-subject sample size was determined for the study (21 subjects in each group). The calculated sample size were decreased due to executive problems but post hoc power analysis revealed an acceptable study power (61%).

Despite enrolling a lower number of students than initially planned, we conducted a post hoc power analysis to assess the statistical power of our study (61%).

(Limitations)

2. For each tool, report the CVI and CVR of the Persian version with reference.

Unfortunately after multiple contacts with the authors, they did not response to our contacts. They don't report CVI and CVR indexes for the Persian questionnaires in their articles.

3. In Table 4, use **ANCOVA** to compare post-test values.

Thank you for your feedback. We conducted **ANCOVA** and added the related sentences in the revised manuscript.

Table 4. Comparison of the two groups' scores of satisfactions with the instruction methods before and after the intervention

P-value[¶]	**P-value**[†]	**Group discussion group, (n=12), Mean ± SD**	**Mobile learning (n= 16), Mean ± SD**	**Scores of satisfactions**
	0.13	27.78 ± 5.07	31.56 ± 6.08	**Before the intervention**
0.09	0.02*	33.13 ± 5.51	38.69 ± 4.78	**After the intervention**
	0.41	5.57 ± 4.96	8.15 ± 7.12	**Mean difference**
		0.02	0.001	**P-value‡**

SD: standard deviation. †Between group and ‡within group comparisons were conducted using independent samples t-test and paired t-test, respectively. ¶ P-value related to ANCOVA test after adjustment for baseline value, age, and sex. P-value<0.05 was considered significant. * Hedges's g= 1.09, 95%CI; 0.29- 1.89.

However, no significant difference was found after adjustment for baseline, age, and sex. (Abstract)

Adjustment for baseline values and age and sex was conducted using analysis of covariance (ANCOVA). (Statistical analysis)

However, no significant difference was found after adjustment for baseline satisfactions score, age, and sex (P=0.09). (Results)

Although the mobile learning group's score of satisfaction was higher than that of the discussion group, the difference was not statistically significant after analysis of covariance. (Discussion)

4 Revision 3

0 comments

No public comments in this round.

5

Revision 4

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Associate Editors

Thank you for taking the time to review our work and provide valuable feedback. We appreciate your comments which undoubtedly improved the quality of our manuscript. We address your suggestions point by point and highlighted them in the manuscript accordingly.

Associate Editor 1:

1. Please revise the sample size calculation to justify your sample.

The sample size section was revised according to your valuable comment:

The G-Power software version 3.1 was used to calculate the sample size. In according to satisfaction variable [mean $(SD)_1$= 115.56 (17.57) and mean $(SD)_2$= 132.24 (17.92)] in a previous study (21) and considering α=0.05, power=80%, and considering t-test for difference between two independent groups' mean, a large effect size, two tails p-value and allocation ratio: 1/1, a 28-subject sample size was determined for the study.

2. Remove: The calculated sample size were decreased due to executive problems but post hoc power analysis revealed an acceptable study power (61%).

We deleted this sentence in the revised manuscript.

5 Revision 4

0 comments

No public comments in this round.