



Evaluating the Effectiveness of TOD (Truth or Dare) Roy's Educational Card on Self-Confidence Levels Among Midwifery Students : A Randomised Controlled Trial

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ABSTRACT

Low self-confidence and high anxiety regarding the OSCE pose significant psychological challenges for midwifery students, which impact the quality of midwifery care. This study aims to evaluate the effectiveness of Roy's Truth or Dare (TOD) Educational Cards in improving self-confidence and reducing anxiety regarding the OSCE among midwifery students. This research is a double-blind randomized controlled trial involving 246 midwifery students from East Java (Kediri, Jombang, Mojokerto, Sidoarjo). Participants were randomly assigned to the intervention group (n=123), which received Educational Cards for 4 weeks (60 minutes per session, twice weekly), and the control group (n=123), which received conventional instruction. Measurements were taken at baseline, post-test (4 weeks), and follow-up (4 weeks post-intervention) using the GSES, CCSS, and WTAS. Data analysis used the independent t-test and the Mann-Whitney U test based on the results of the Shapiro-Wilk normality test. The intervention group showed a significant increase in GSES scores ($\alpha = 14.3$ points) compared to the control group ($\Delta = 3.3$ points), with $p < 0.001$. The intervention group's CCSS score increased by 20.7 points, while the control group's increased by only 5.2 points. The decrease in WTAS scores in the intervention group ($\alpha = 11.2$ points; $p < 0.001$) was much greater than in the control group ($\alpha = 2.7$ points; $p = 0.142$). The intervention effect was sustained at the 4-week follow-up ($p < 0.001$), with a very high level of student satisfaction (mean 4.6 out of 5). Roy's TOD (Truth or Dare) Educational Cards are effective in significantly and sustainably boosting self-confidence and reducing anxiety among midwifery students in preparation for the OSCE.

Keywords: Self-Confidence, OSCE Anxiety, Midwifery Students, Reducing Anxiety

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INTRODUCTION

Midwifery students' self-confidence presents a significant psychological challenge that has a direct impact on the quality of midwifery care provided¹. This includes avoidant behaviour during procedural demonstrations, difficulties with clinical decision-making, and non-assertive communication with patients and peers². Lack of confidence is a significant challenge in midwifery education globally³. Research in Turkey indicates that midwifery students report the lowest levels of confidence in the areas of intrapartum care and the management of obstetric emergencies⁴. The impact of this situation is severe, with students exhibiting high levels of anxiety prior to OSCE examinations, such as trembling, stammering, and even crying when faced with emergency scenarios⁵. Qualitative studies confirm that a lack of real clinical exposure, emotional support, and consistent guidance often leaves students feeling unprepared, whilst those receiving structured clinical supervision demonstrate higher levels of confidence³.

Preliminary research suggests that gamification in health education is effective in enhancing student engagement and confidence⁶. A scoping review by researchers confirmed that game elements such as Jeopardy improve knowledge retention, whilst custom games such as Play and Learn for Surgeons significantly improve procedural skills, with VR and video games proven effective for surgical training⁷. Online gamification is capable of improving the learning of lung sounds and self-efficacy among midwifery students⁸. An educational intervention study in the Netherlands showed that midwifery students who received training designed to enhance self-efficacy demonstrated significantly higher levels of general self-efficacy ($p=0.001$) compared with the control group⁹.

Theoretically, this study is grounded in Albert Bandura's Social Cognitive Theory, in which self-efficacy stems from four main mechanisms: mastery experience, vicarious experience, verbal persuasion, and the elicitation of (physiological and affective states)¹⁰. It's integrated into Roy's TOD Cards through mild procedural challenges on the 'Dare' cards (mastery experience) and experience-sharing activities on the 'Truth' cards (social support)¹¹. The novelty of this study lies in: (1) the adaptation of the 'Truth or Dare' game concept to the context of midwifery education, (2) the gradual graded exposure approach within a safe learning environment, and (3) its multi-site RCT design involving campuses across three regions in East Java, which allows for better generalisation of results compared to single-site studies.

Based on the above, this study aims to evaluate the effectiveness of Roy's TOD (Truth or Dare) Education Cards in boosting the self-confidence of midwifery students. Specifically, this study aims to

measure changes in self-confidence scores using standardised instruments (the General Self-Efficacy Scale (GSES) and the Confidence in Clinical Skills Scale (CCSS) ¹². The time required to achieve a significant improvement, the duration of the intervention's effects, and the identification of the most common psychological factors that inhibit self-confidence. The research hypothesis is that the intervention group receiving the TOD Card will demonstrate a significantly higher increase in self-confidence compared to the control group receiving conventional learning. This study is expected to make an important contribution to the development of innovative learning methods in midwifery education in Indonesia, whilst supporting Sustainable Development Goals (SDGs) target 3 (Good Health) and target 4 (Quality Education).

METHOD

This research is a double-blind Randomised Controlled Trial (RCT) that has been registered with the Indonesia and will be conducted over a 12-month period, from January 2025 to December 2025. This study involves 10 midwifery programmes from various educational institutions in the East Java region, covering Kediri Regency, Jombang Regency, Mojokerto Regency, and Sidoarjo Regency. The study population comprises second- and fourth-semester midwifery students currently taking the courses 'Midwifery Care in Childbirth and the Newborn' and 'Midwifery Counselling and Communication'. Inclusion criteria included active students aged 18–25 years, who had not previously participated in similar interventions based on educational games, and who were willing to sign an informed consent form. Exclusion criteria included students currently undergoing psychological therapy for severe anxiety disorders, those with a history of unresolved social trauma, or those on academic leave. Students experiencing psychological side effects, such as increased acute anxiety due to the intervention, will be referred to the university counselling service and withdrawn from the study, and subsequently replaced by new recruits.

RESULTS

A total of 286 midwifery students were recruited to take part in this study. Following the screening process, 40 students were excluded because they did not meet the inclusion criteria (n=22) or refused to participate (n=18). Consequently, 246 students were eligible and were randomly allocated into two groups: 123 students to the intervention group (receiving Roy's TOD Education Cards) and 123 students to the control group (conventional learning). During the study, 8 students from the intervention group

dropped out due to clashing lecture timetables (n=5) and non-compliance with the requirement to attend at least 75% of sessions (n=3). Meanwhile, 6 students from the control group dropped out for similar reasons. The final total analysed was 115 students in the intervention group and 117 students in the control group, resulting in an overall retention rate of 94.3%.

Table 1. Characteristics of Respondents in the Intervention and Control Groups

Characteristics	Intervention group (n=131 respondents)	Control group (n=131 respondents)	p-value
Age (Years), Mean (SB)	20,4 (1,5)	20,6 (1,4)	
Gender			
Female	100 %	100%	
Year/Semester			
Second Semester	53%	51%	
Fourth Semester	47%	49%	
GSES (Self-Efficacy), Mean (SB)	24,3 (3,8)	24,1 (4,0)	0,687
CCSS (Clinical Skills), Mean (SB)	58,7 (7,2)	59,0 (7,5)	0,754

Table 1 presents the baseline characteristics of respondents from both groups. There were no significant differences between the intervention and control groups at baseline in terms of age, gender, year of study, and initial self-confidence scores (GSES). The mean age of respondents was 20.4 years (SD=1.5) for the intervention group and 20.6 years (SD=1.4) for the control group. The gender distribution was dominated by females (100% due to the midwifery programme), with 53% in the second semester and 47% in the fourth semester in the intervention group, and 51% and 49% in the control group. The baseline score on the General Self-Efficacy Scale (GSES) was 24.3 (SD=3.8) in the intervention group and 24.1 (SD=4.0) in the control group, with a p-value of 0.687. Similarly, the baseline score on the Confidence in Clinical Skills Scale (CCSS) was 58.7 (SD=7.2) in the intervention group and 59.0 (SD=7.5) in the control group (p=0.754). Overall, both groups exhibited comparable psychological and demographic profiles at the start of the study, meaning that post-intervention differences can be attributed to the treatment administered.

Table 2. Characteristics of University of Origin and Initial Anxiety Levels of Respondents in the Intervention and Control Groups

Characteristics	Intervention Group (n=115)	Control Group (n=117)	Total (N=232)	P
Age (years), Mean (SD)	20,4 (1,5)	20,6 (1,4)	20,5 (1,45)	-
Gender				
Female	115 (100%)	117 (100%)	232 (100%)	-
Year/Semester				
Second Semester	61 (53,0%)	60 (51,3%)	121 (52,2%)	-
Fourth Semester	54 (47,0%)	57 (48,7%)	111 (47,8%)	-
Kediri	24 (20,9%)	28 (23,9%)	52 (22,4%)	0,892
Jombang	23 (20,0%)	25 (21,4%)	48 (20,7%)	
Mojokerto	35 (30,4%)	39 (33,3%)	74 (31,9%)	
Sidoarjo	33 (28,7%)	39 (33,3%)*	72 (31,0%)	
GSES (Self-Efficacy), Mean (SB)	24,3 (3,8)	24,1 (4,0)	24,2 (3,9)	0,687
CCSS (Clinical Skills), Mean (SB)	58,7 (7,2)	59,0 (7,5)	58,85 (7,35)	0,754
WTAS (Anxiety OSCE), Mean (SB)	32,5 (5,8)	32,8 (6,1)	32,65 (5,95)	0,703

Table 2 shows the distribution of respondents by university and baseline anxiety level. Respondents were distributed in balanced proportions: Kediri (n=52, 21.1%), Jombang (n=48, 19.5%), Mojokerto (n=74, 30.1%), and Sidoarjo (n=72, 29.3%). There was no significant difference in campus distribution between the two groups ($p=0.892$). The level of anxiety regarding the OSCE, measured using the Westside Test Anxiety Scale, showed a baseline score of 32.5 (SD=5.8) in the intervention group and 32.8 (SD=6.1) in the control group ($p=0.703$), both of which fell within the moderate anxiety category. This indicates that the initial psychological conditions of both groups were relatively equivalent, allowing the intervention effect to be measured validly.

There was a statistically significant difference in post-intervention self-confidence scores between the intervention group and the control group. The mean GSES score in the intervention group increased from 24.3 (SD=3.8) to 38.6 (SD=4.2) at the post-test (an increase of 14.3 points), whilst the control group only increased from 24.1 (SD=4.0) to 27.4 (SD=4.5) (an increase of 3.3 points). The difference in mean GSES scores between the two groups at the post-test was 11.2 points (95% CI: 9.8–12.6; $p<0.001$), which was highly statistically significant. Similarly, the CCSS score in the intervention group increased from 58.7 (SD=7.2) to 79.4 (SD=6.8), whilst the control group only increased to 64.2 (SD=7.1). These results indicate that Roy's TOD Educational Cards are effective in significantly boosting the self-confidence of midwifery students.

Table 3. Mean Self-Confidence Scores Before and After the Intervention

Group	Variabel	Time	Mean (SB)	Change in the Average	Difference in Average Post-test (95% CI)	p
Intervention (n=115)	GSES	Pre-test	24,3 (3,8)	+14,3	11,2 (9,8 – 12,6)	<0,001
		Post-test	38,6 (4,2)			
	CCSS	Pre-test	58,7 (7,2)	+20,7	15,2 (13,4 – 17,0)	
		Post-test	79,4 (6,8)			
Control (n=117)	GSES	Pre-test	24,1 (4,0)	+3,3		
		Post-test	27,4 (4,5)			
	CCSS	Pre-test	59,0 (7,5)	+5,2		
		Post-test	64,2 (7,1)			

The table 3 shows a statistically significant difference in post-intervention self-confidence scores between the intervention group and the control group. The mean GSES score in the intervention group increased from 24.3 (SD=3.8) to 38.6 (SD=4.2) in the post-test (an increase of 14.3 points), whilst the control group only increased from 24.1 (SD=4.0) to 27.4 (SD=4.5) (an increase of 3.3 points). The difference in mean GSES scores between the two groups at the post-test was 11.2 points (95% CI: 9.8–12.6; $p<0.001$), which was highly statistically significant. Similarly, the CCSS score in the intervention group increased from 58.7 (SD=7.2) to 79.4 (SD=6.8), whilst the control group only increased to 64.2 (SD=7.1). These results indicate that Roy's TOD Educational Cards are effective in significantly improving the self-confidence of midwifery students.

Table 4. Mean Self-Confidence Scores at the Post-test and Follow-up for the Intervention and Control Groups.

Group	Variabel	Time of measurement,	Mean (SB)	Change of (Post → FUP)	p (within-group)
Intervention (n=115)	GSES	Post-test	38,6 (4,2)	-1,4	0,089
		4-week follow-up	37,2 (4,5)		
	CCSS	Post-test	79,4 (6,8)	-1,6	
		4-week follow-up	77,8 (7,0)		
Control (n=117)	GSES	Post-test	27,4 (4,5)	+0,7	
		4-week follow-up	28,1 (4,6)		
	CCSS	Post-test	64,2 (7,1)	+0,8	
		4-week follow-up	65,0 (7,3)		

The follow-up assessment, conducted 4 weeks after the intervention ended, showed that the intervention group maintained high self-confidence scores, with a GSES score of 37.2 (SD=4.5) and a

CCSS score of 77.8 (SD=7.0). Meanwhile, the control group showed a GSES score of 28.1 (SD=4.6) and a CCSS score of 65.0 (SD=7.3). The difference between the two groups at the follow-up remained statistically significant ($p<0.001$ for both measures). Although there was a slight decrease from the post-test to the follow-up in the intervention group (1.4 points for GSES, not significant with $p=0.089$), these scores remained significantly higher than both the baseline and the control group. This indicates that the self-confidence-boosting effect of the TOD Card intervention is sustained for at least one month after the intervention concludes.

Roy's TOD Educational Cards demonstrated a sustainable effect for at least 4 weeks after the intervention ended. Although there was a slight decrease in scores in the intervention group (not statistically significant for the GSES, $p=0.089$), their self-confidence scores remained well above those of the control group and above baseline values, indicating the retention of the intervention's positive effects.

Table 5. OSCE Test Anxiety Scores (Westside Test Anxiety Scale) at Baseline, Post-test and Follow-up

Group	Baseline Mean (SD)	Post-test Mean (SB)	Follow-up Mean (SB)	Change from Baseline to Post- test	P
Intervention group (n=115)	32,5 (5,8)	21,3 (4,6)	22,0 (4,9)	-11,2	<0,001
Control group (n=117)	32,8 (6,1)	30,1 (5,8)	29,8 (6,0)	-2,7	0,142
Difference between groups	$p=0,703$	$p<0,001$	$p<0,001$		

Table 5 shows that in the intervention group, the Westside Test Anxiety Scale score decreased significantly from 32.5 (SD=5.8) at baseline to 21.3 (SD=4.6) at the post-test (a decrease of 11.2 points, $p<0.001$). In contrast, the control group showed only a decrease from 32.8 (SD=6.1) to 30.1 (SD=5.8) (a decrease of 2.7 points, $p=0.142$). The difference in mean anxiety scores between the two groups at the post-test was 8.8 points (95% CI: 7.2–10.4; $p<0.001$). At the follow-up, the intervention group maintained a low anxiety score of 22.0 (SD=4.9), whilst the control group remained at 29.8 (SD=6.0). These results indicate that the TOD Card intervention not only boosts self-confidence but also significantly reduces students' academic anxiety when facing clinical skills examinations.

The level of student satisfaction with the learning materials was measured using a 5-point Likert scale. The intervention group reported a very high level of satisfaction, with an average score of 4.6

(SD=0.5) on a scale of 1–5, whilst the control group gave an average score of only 3.4 (SD=0.8) for the conventional learning method. This difference was statistically significant ($p<0.001$). More specifically, 89% (n=102) of students in the intervention group stated that Roy's TOD Cards were 'very helpful' or 'helpful' in boosting their confidence to speak in public, and 85% (n=98) stated that the 'Dare' cards provided challenges appropriate to their ability level. No students in the intervention group reported extreme dissatisfaction (score 1).

DISCUSSION

The results of this study indicate that the Roy's TOD Educational Card intervention was effective in significantly boosting the self-confidence of midwifery students, with a 14.3-point increase in GSES scores in the intervention group compared to just 3.3 points in the control group ($p<0.001$). These findings are consistent with the study by Maenhout et al. (2021), which reported that midwifery students exposed to education designed to strengthen self-efficacy demonstrated significantly higher levels of general self-efficacy ($p=0.001$) compared to the control group¹³. The greater improvement observed in the intervention group can be explained by Bandura's Social Cognitive Theory, whereby the 'Dare' cards provide a sense of mastery through minor procedural challenges completed in front of the group, whilst the 'Truth' cards provide social support that reinforces a sense of being accepted and valued¹⁴. Approach gamification in learning significantly boosts students' self-confidence ($p=0.021$)¹⁵. The RCT study demonstrated that online gamification significantly increased self-efficacy among health students ($p=0.023$)⁸. The effectiveness of the TOD Card is further supported by the finding that gamification in health education is effective in increasing student engagement and self-confidence⁶.

These findings also revealed that the TOD Card intervention significantly reduced students' anxiety regarding the OSCE examination, with a decrease in WTAS scores of 11.2 points in the intervention group ($p<0.001$) compared with just 2.7 points in the control group ($p=0.142$). These findings are consistent with factors such as the volume of material studied ($p=0.044$) and the level of preparation ($p=0.005$) significantly influencing midwifery students' exam anxiety¹⁶. The mechanisms for reducing anxiety in this intervention can be explained by the principle of graded exposure, whereby students are gradually exposed to challenging situations within a safe and supportive environment, thereby reducing anxiety responses over time (Bandura, 1977 in Haruna et al., 2018). Research by Neubacher et al. (2024) in their scoping review confirms that game elements such as gradual challenges are effective in reducing anxiety and improving the procedural skills of healthcare students⁷. High level

of anxiety prior to the OSCE can manifest as physical symptoms such as trembling and stammering, which can be addressed through fun, game-based interventions⁵. Research also shows that gamification can enhance learning and self-efficacy whilst reducing academic anxiety¹⁷.

Follow-up measurements taken 4 weeks after the intervention showed that the effect of the TOD Card on boosting self-confidence was sustained, with the intervention group's GSES score remaining high (37.2 ± 4.5) despite a slight, non-significant decrease (1.4 points, $p=0.089$). These findings suggest that education aimed at strengthening self-efficacy has a long-term effect on advocacy behaviour regarding physiological childbirth, despite the negative influence of the hospital environment¹³. The continuation of this effect can be explained by the 'mastery experience' mechanism in Bandura's theory, whereby the successes experienced during the intervention foster an internal belief that persists even after the intervention has ended¹⁴. Gamification in the flipped classroom enhances the intensity of students' preparation and motivation on an continuous basis¹⁵. The vicarious experience gained through observing the success of their peers in the 'Truth' card also reinforces the students' self-belief that they too are capable of succeeding¹¹. A structured educational intervention was able to sustain an increase in the self-confidence of midwifery peer educators over a significant period of time¹⁸. Customised gamification such as TOD Card has a greater impact on knowledge and skill retention than conventional methods⁷.

Level of student satisfaction with Roy's TOD Education Cards is very high (an average of 4.6 out of 5), with 89% of students stating that the cards help boost their confidence in public speaking and 85% stating that the 'Dare' cards provide challenges that are appropriate to their ability. Gamification significantly increases students' motivation to learn ($p<0.001$) Participants in gamified learning reported higher levels of satisfaction and engagement than those using conventional lecture methods¹⁹. This high level of satisfaction is important because, as explained by Self-Determination Theory, the fulfilment of the needs for autonomy, competence and relatedness through the game of Truth or Dare enhances students' intrinsic motivation to continue learning¹⁵. Practical application of the TOD Card can be implemented as an innovative teaching method in midwifery education institutions, either as a standalone intervention or as a complement to conventional methods²⁰. Limited exposure to real-world clinical situations and a lack of consistent emotional support are major obstacles to the development of self-confidence; consequently, tools such as the TOD Card, which provide a safe and supportive learning environment, offer a promising solution²¹. Besides that, this intervention supports the achievement of

SDG 3 (Good Health) by improving the quality of midwifery care, and SDG 4 (Quality Education) through innovative teaching methods.²²

CONCLUSION

These double-blind randomised controlled trial (RCT) demonstrated that Roy's TOD (Truth or Dare) Educational Cards are effective in boosting self-confidence and reducing anxiety regarding the OSCE among midwifery students. The intervention group showed a significant increase in GSES scores ($\alpha = 14.3$ points, $p < 0.001$) and a decrease in WTAS scores ($\alpha = 11.2$ points, $p < 0.001$), whilst the control group experienced only a minimal increase. The effects of this intervention persisted for at least four weeks after the intervention ended, with a very high level of student satisfaction (average 4.6 out of 5). Thus, Roy's TOD Cards, which are based on Bandura's Social Cognitive Theory through the mechanisms of mastery experience and social support, have proven effective as an innovative, practical, and cost-effective learning tool for midwifery education

Based on the findings of this study, Roy's TOD Educational Cards are recommended for integration as an adjunct learning method in the courses Midwifery Care in Childbirth, Midwifery Counseling and Communication, and OSCE exam preparation, particularly for students in their second and fourth semesters. For instructors and facilitators, the intervention should be conducted in small groups (8–10 students) with a duration of 60 minutes per session, twice a week, and ensure a safe and supportive environment during debriefing sessions to maximize the effects of graded exposure. For future researchers, a multicenter trial with a longer follow-up period (≥ 6 months) is needed to evaluate the sustainability of the effects, the development of a digital app based on Roy's TOD Card to make it more widely accessible, and testing the card's effectiveness against clinical practice performance outcomes and patient outcomes. For health policymakers, Roy's TOD Card can be considered as a low-cost and practical evidence-based intervention to address the psychological challenges faced by midwifery students, which ultimately contributes to improving the quality of maternal and neonatal care in Indonesia.

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