

Impact of Polarity Thinking Training Program on Resilience and Intra-Professional Collaboration among Nurses at Najran General Hospital, Saudi Arabia

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Paper Number: 240468

<https://doi.org/10.68089/202609240468>

Abstract:

Background: Polarity thinking allows nurses to gain a more in-depth insight into the complexities of their work. **Aim:** To determine the effect of a polarity thinking training program on resilience and intra-professional collaboration among nurses at Najran General Hospital, Saudi Arabia. **Method:** A quasi-experimental (one-group pretest–posttest with three-month follow-up) design was used in all inpatient units of Najran General Hospital with 114 nurses, using four tools: the Polarity Thinking Knowledge Questionnaire, Polarity Map Evaluation Observational Checklist, the Resilience Scale, and the Nurse–Nurse Collaboration Behavior Scale. **Results:** There was a statistically significant positive correlation between nurses' knowledge about polarity thinking and nurses' resilience after applying the training program ($r = 0.541$, $p < 0.01$), as well as between nurses' knowledge about polarity thinking and intra-professional collaboration after applying for the training program ($r = 0.412$, $p < 0.01$). **Conclusion:** The polarity thinking training program proved to be effective in increasing the knowledge of nurses about polarity thinking, their skills in using polarity mapping steps and coping with polarity situations, and their beliefs about resilience and intra-professional collaboration. **Recommendation:** The hospital administration advised to promote the application of polarity thinking methods in unit meetings, problem-solving discussions, and decision-making processes.

Keywords: Intra-Professional Collaboration, Nurses, Polarity Thinking, Resilience.

Introduction:

Polarities shape complex hospitals: interdependent, persistent tensions that cannot be resolved forever but must be constantly balanced (Sorour et al., 2023). Polarity thinking provides nurses with a systematic approach to identifying these

tensions, including efficiency versus thoroughness, or autonomy versus collaboration, and to manage them instead of solving them, which helps them make more thoughtful and evidence-based decisions in patient care (Mohamed, Abo Elmagd, and Yussief, 2021; Elsayed, Eid, and Kamel, 2023). The strategy entails three interconnected processes: identifying a polarity, plotting the up-sides and down-sides of each pole, and acting to capitalize on the strengths of both poles. This framework needs intentional training to be implemented by nurses, and its implementation may be restricted by the problem-solving styles and time constraints in the hectic clinical environment (Winckler, 2024).

Resilience is also closely related to polarity thinking, the ability to maintain wellbeing and job performance during professional stress (Maiz, Elksas, Ahmed, and Aly, 2024). Nursing is an emotionally stressful occupation, and resilience, which is influenced by individual characteristics, social networks, and organizational culture, helps to prevent burnout and maintain the quality of patient care (Castillo-Gonzalez et al., 2024; Ang and Lau, 2024). Structured interventions, including stress-management workshops, peer support, and self-care practices, can be used to strengthen resilience, and healthcare organizations are urged to invest in the wellbeing of nurses as a pathway to improved patient outcomes and team performance (Aryuwat et al., 2024; Rogers et al., 2024).

Another consequence of polarity thinking is intra-professional collaboration: respectful exchange of information, skills, and responsibility between nurses (Çelik Durmuş et al., 2024). Close teamwork minimizes mistakes and negative outcomes, enhances job satisfaction, and decreases burnout, but hierarchical structures, excessive workload, and insufficient training on teamwork restrict it (Chen, Zhang, Zheng, Hong, and Zhang, 2024; Brewer, Ziegler, Kurdian, and Nguyen, 2024; Succheralli, 2024). Nurses with deficient polarity thinking skills might not be able to compromise and adapt, which weakens team cohesion, whereas resilient, polarity-literate nurses are in a better position to balance competing demands like quality versus efficiency and to maintain collaboration in the face of pressure (Bai and Bai, 2024; Wong, Whitehead, and Kitto, 2024).

Although this theoretical justification, there is a lack of empirical evidence on the training of polarity thinking in nursing, especially its synergistic impact on resilience and intra-professional collaboration. The purpose of this study was thus to determine the effect of a polarity thinking training program on resilience and intra-professional collaboration among nurses at Najran General Hospital, Saudi Arabia.

Aim of the Study

The study aimed to determine the effect of a polarity thinking training program on resilience and intra-professional collaboration among nurses at Najran General Hospital, Saudi Arabia.

Research Hypotheses

H1. The knowledge of nurses about polarity thinking is enhanced following the training program.

H2. The level of perceived resilience of nurses increases following the training program.

H3. The perceived intra-professional collaboration of nurses improves after implementing the training program.

Method

Design

A quasi-experimental, one-group pretest–posttest design with a three-month follow-up (no control group) was used to achieve the aim of this study.

Setting

The study was conducted across all inpatient units of Najran General Hospital, Saudi Arabia, a Ministry of Health facility with 250 beds, including emergency, dialysis, surgical, orthopedic, obstetric, and pediatric departments.

Participants

A convenience sample of all nurses providing direct patient care in the inpatient departments ($n = 114$) was included.

Data Collection Tools

Four tools were used, together with a personal-data sheet covering age, sex, education, employment status, and years of experience.

Tool I: Polarity Thinking Knowledge Questionnaire, developed by the researcher from the literature (Sorour et al., 2023; Waever, 2022; Winckler, 2024), assessed nurses' knowledge of polarity thinking definitions, principles, and mapping steps/techniques across 24 items (1 = correct, 0 = incorrect). Scores were classified as low (<60%), moderate (60–75%), or high (>75%).

Tool II: Polarity Map Evaluation Observational Checklist (Yohemas, 2020) assessed nurses' ability to apply the polarity map steps and manage polarity situations (2 = completely done, 1 = partially done, 0 = not done), using the same three-level cut-off.

Tool III: The Resilience Scale (Shatté, Perlman, Smith, & Lynch, 2017), a 16-item, four-subscale tool rated on a 5-point Likert scale, assessed nurses' resilience using the same cut-off system.

Tool IV: Nurse–Nurse Collaboration Behavior Scale (Liao et al., 2015), a 23-item scale covering conflict management (8 items), communication and coordination (7 items), and professionalism (8 items), measured the frequency of collaborative behaviors using the same cut-off system.

All four tools were administered before, immediately after, and three months after the training program.

Validity and Reliability

To test the clarity and feasibility of the tools, a pilot study was carried out on 10% of the sample ($n = 11$), randomly selected and not included in the main study; some minor changes were made. Experts in nursing administration confirmed content and face validity and suggested some minor revisions. The Polarity Thinking Knowledge Questionnaire, Polarity Map Evaluation Observational Checklist, Resilience Scale, and Nurse Collaboration Behavior Scale had Cronbach alpha of 0.89, 0.92, 0.79, and 0.93, respectively.

Ethical Considerations

The Research Ethics Committee, Faculty of Nursing, MXX University, provided ethical approval, and the hospital administration gave official permission. The involvement was voluntary, and confidentiality and privacy were ensured, and all participants were informed about the purpose and nature of the study and provided written informed consent.

Data Collection

After institutional and hospital approvals, the researcher informed the participants about the study one by one and got their consent. A polarity thinking training program was then developed based on the pretest results and literature review, and delivered to small groups using brainstorming, lectures, videos, discussions, and handouts. The four tools were filled out right after training and three months later and results were compared to pretest baseline data.

The program was implemented over the period from the beginning of December 2024 to the end of June 2025. Nurses were divided into small groups. The training program was implemented in the morning and evening shifts three days a week. The training program lasted 8 hours, with each group having 4 sessions, each session was 2 hours.

Data Analysis

Data were analyzed using SPSS version 25. Normality was tested with the Shapiro–Wilk test. Categorical variables were described using frequencies and percentages, and continuous variables using means and standard deviations. Repeated measures were compared using two-way ANOVA (parametric, continuous variables) or the Friedman test (ordinal variables). Independent t-tests and one-way ANOVA compared two and more than two means, respectively, and Pearson's correlation assessed associations between continuous variables. Significance was set at $p < 0.05$, and $p < 0.01$ was considered highly significant.

Results

Table 1 shows the individual attributes of the nurses who were researched at the Najran General Hospital in Saudi Arabia. The average age of the nurses was 34.01 ± 6.19 years and over half of them (54.4) were aged 35 to < 40 years (almost two thirds of them, 64% were female). In terms of education, over half of them (57%) had a bachelor's degree in nursing. In terms of department, over half of them (54.4) were in the medical department. In terms of years of experience, less than half of them (43.8) had 5-10 years of experience with a mean of 7.47 ± 0.79 years. In terms of the number of hours they work in their present unit, over half of them (52.6) worked less than 8 hours a day.

Table (1): Personal characteristics of the studied nurses at Najran General Hospital, Saudi Arabia (n= 114)

Personal characteristics	No.	%
Age		
▪ < 25	14	12.3
▪ 25 < 30	14	12.3
▪ 30 < 35	19	16.6
▪ 35 < 40	62	54.4
▪ ≥ 40	5	4.4
Mean ± SD	34.01 ± 6.19	
Sex		
▪ Male	41	36
▪ Female	73	64
Educational qualification		
▪ Diploma of nursing	32	28.1
▪ Bachelor's degree of nursing	65	57
▪ Master's degree of nursing	17	14.9

▪ PHD	0	0
Years of experience		
▪ < 1	3	2.6
▪ 1 < 5	23	20.1
▪ 5 - 10	50	43.8
▪ > 10	38	33.3
Mean ± SD	7.47 ± 0.79	
Department		
▪ Medical	62	54.4
▪ Surgical	52	45.6
The amount of time spent working in their current unit in a day		
▪ < 8 hours	60	52.6
▪ 8 -12 hours	30	26.3
▪ > 12 hours	24	21.1

Table 2 shows the knowledge levels of nurses about polarity thinking at the various stages of the training program. The pre-test and the post-training program showed improvements in that the percentage at the high level was 57.9 and the percentage at the highest level was 62.3 after three months. The variations in the knowledge of nurses about polarity thinking at the various stages of the training program were very significant ($p \leq 0.01$).

Table (2) Levels of nurses' knowledge regarding polarity thinking during different phases of training program (n=114)

Levels of nurse's knowledge regarding polarity thinking	Score	Before		Post		Follow up	
		No.	%	No.	%	No.	%
▪ Low (< 60%)	0 - 11	43	37.7	21	18.4	21	18.4
▪ Moderate (60% - 75%)	12 - 18	34	29.8	27	23.7	22	19.3
▪ High (≥ 75%)	19 - 24	37	32.5	66	57.9	71	62.3
Chi-squared tests: X² / P		97.31/ 0.000*		70.73 / 0.000**		59.57/ 0.000**	

*** Significant if ($p \leq 0.05$) ** Highly significant if ($p \leq 0.01$)**

Table 3 demonstrates the degrees of nurses to implement the steps of the polarity map and cope with polarity situations at the various stages of the training program in Najran General Hospital, Saudi Arabia. The results between the pre-test and the post-training program showed improvements with the percentage of the high level being 5.3 and after three months, it rose to 10.5. The statistical significance of the differences was significant ($p \leq 0.05$).

Table (3) Levels of nurse's ability to apply the polarity map steps and manage polarity situations during different phases of training program at Najran General Hospital, Saudi Arabia (n=114)

Levels of nurse's ability to apply the polarity map steps and manage polarity situations	Score	Before		Post		Follow up	
		No.	%	No.	%	No.	%
▪ Low	0 - 15	86	75.4	78	68.4	76	66.7
▪ Moderate	16 - 24	25	21.9	30	26.3	26	22.8
▪ High	25 - 32	3	2.7	6	5.3	12	10.5
Chi-squared tests: X ² / P		97.31/ 0.000		70.73/ 0.000**		59.57 / 0.000**	

* Significant if ($p \leq 0.05$) ** Highly significant if ($p \leq 0.01$)

Table 4 shows the perception levels of the nurses towards resilience at the various stages of the training program at Najran General Hospital, Saudi Arabia. The pre-test and the post-training program showed improvements as the percentage at the high level was 28.1, and three months later, it was 44.7. The statistical significance of the differences in the perception of nurses on resilience at the various stages of the training program was statistically significant ($p \leq 0.05$).

Table (4) Levels of nurses' perception regarding resilience during different phases of training program at Najran General Hospital, Saudi Arabia (n=114)

Levels of nurse's perception regarding resilience	Score	Before		Post		Follow up	
		No.	%	No.	%	No.	%
▪ Low	1 - 39	37	32.5	9	7.9	8	7
▪ Moderate	40 - 60	63	55.3	73	64	55	48.2
▪ High	61 - 80	14	12.2	32	28.1	51	44.7
Chi-squared tests: X ² / P		84.94/ 0.000**		46.66/ 0.003**		43.47 / 0.015**	

* Significant if ($p \leq 0.05$) ** Highly significant if ($p \leq 0.01$)

Table 5 shows the perception levels of nurses about intra-professional collaboration at the various stages of the training program. The pre-test and the post-training program showed a slight improvement in the percentage of the high level as it was 56.1% and it rose after three months to 60.5%. The variations in the perception of the nurses towards intra-professional collaboration at the various stages of the training program were statistically significant ($p \leq 0.05$).

Table (5) Levels of nurses' perception regarding intra-professional collaboration during different phases of training program at Najran General Hospital, Saudi Arabia (n=114)

Levels of nurse's perception regarding intra-professional collaboration	Score	Before		Post		Follow up	
		No.	%	No.	%	No.	%
▪ Low	1 - 57	32	28.1	24	21.1	11	9.6
▪ Moderate	58 - 86	27	23.7	26	22.8	34	29.8
▪ High	87 - 115	55	48.2	64	56.1	69	60.5
Chi-squared tests: X ² / P		11.73/ 0.003		26.73/ 0.000**		44.89 / 0.000**	

* Significant if ($p \leq 0.05$) ** Highly significant if ($p \leq 0.01$)

Table 6 shows the relationship between the knowledge of polarity thinking among nurses and the resilience of nurses after the implementation of the training program in NAJRAN General Hospital, Saudi Arabia. There was a highly statistically significant positive correlation between nurses' knowledge about polarity thinking and nurses' resilience after applying the training program ($r = 0.541$, $p < 0.01$).

Table (6) Correlation between nurses' knowledge about polarity thinking and nurses' resilience after applying training program at Najran General Hospital, Saudi Arabia.

Variables		Nurses' resilience
Nurses' knowledge about polarity thinking	R	0.541
	P	0.000**

*Statistically significant ($p \leq 0.05$) / ** Highly statistically significant ($p \leq 0.01$).

Table 7 presents the correlation between nurses' knowledge about polarity thinking and intra-professional collaboration among nurses after applying the training program at Najran General Hospital, Saudi Arabia. There was a highly statistically significant positive correlation between nurses' knowledge about polarity thinking and intra-professional collaboration after applying the training program ($r = 0.412$, $p < 0.01$).

Table (7) Correlation between nurses' knowledge about polarity thinking and intra-professional collaboration among nurses after applying training program at Najran General Hospital, Saudi Arabia.

Variables		Intra-professional collaboration among nurses
Nurses' knowledge about polarity thinking	R	0.412
	P	0.000**

*Statistically significant ($p \leq 0.05$) / ** Highly statistically significant ($p \leq 0.01$).

Discussion

Polarity thinking assists nursing personnel to deal with interdependent tensions, like workload efficiency versus patient-centered care, or autonomy versus teamwork, which cannot be resolved permanently but must be constantly balanced. Such training facilitates adaptive thinking and problem-solving in high-stress clinical settings (Ahmed, Ali, and Bashandy, 2026) and enables nurses to re-conceptualize stressors as dualities to be addressed instead of negative events, which promotes proactive coping (Pesut, 2026). Since intra-professional collaboration requires balancing personal and group needs, autonomy and collaboration, and short- and long-term objectives, polarity thinking can also be applied to the way nurses collaborate (Maiz et al., 2024). This paper thus investigated the effect of a polarity thinking training program on resilience and intra-professional collaboration among nurses in Najran General Hospital, Saudi Arabia.

In line with Saleh and Ali (2023), the knowledge of polarity thinking among nurses improved significantly post-training, and the improvements were maintained at three months follow-up, indicating that systematic instruction can lead to long-term cognitive change. The capacity of nurses to implement the steps of the polarity map and deal with polarity situations also enhanced gradually during the pretest, posttest, and follow-up tests. This trend is probably due to the participatory nature of the program, which shifts to theoretical material to guided practice, along with the strengthening influence of the follow-up period on the retention of skills. The same has been observed following polarity-management training among nurse managers (Aly et al., 2024; Mohamed, Abo Elmagd, and Yussief, 2021), where the acquisition of skills is usually highest right after the training and sustained thereafter.

The training phases also led to a significant increase in resilience, as other skills-based interventions: problem-solving training has been found to enhance resilience in nursing students compared to controls (Şenocak and Demirkiran, 2023), and a web-based resilience program enhanced resilience and psychological wellbeing in nurses (Henshall et al., 2023). This, along with the current results, confirms the possibility of intentional, systematic work to develop resilience among nursing personnel.

The perceptions of intra-professional collaboration among nurses increased significantly between pretest and posttest and even three months follow-up, probably due to the focus of the program on active learning, role clarification, and shared experience, which was supported by follow-up contact and daily practice. This aligns with Saleh and Ali (2023), who discovered that polarity thinking training enhanced intra-professional communication and cognitive flexibility, and with the perspective that structured training enhances the adaptive thinking and professional confidence that resilience is based on.

The knowledge of polarity thinking among nurses was significantly associated with their post-training resilience ($r = 0.541$) and intra-professional collaboration ($r = 0.412$). This trend is reminiscent of previous research that has found solution-oriented thinking to be associated with resilience in nursing students (Avcı and Ataş-Oksuz, 2023) and a resilience-oriented program to be associated with better work engagement in nurse interns (Elwany et al., 2023), and is conceptually aligned with the argument by Scott (2025) that both/and polarity thinking enhances relational competence, shared decision-making, and collaboration. Polarity thinking knowledge was also strongly associated with the capacity of nurses to implement the steps of the polarity map, which is consistent with Adams et al. (2020), who discovered that Polarity Thinking™ knowledge enhanced the management of complex clinical scenarios and systematic problem-solving in nurses. Collectively, these associations indicate that enhancing the knowledge of nurses about polarity thinking is directly connected to its practical implementation, and to resilience and collaboration gains.

Limitations

There are a number of limitations to this study. The one-group pretest–posttest design without a control group limits causal inference due to possible maturation and testing effects. The convenience sample of one hospital limits generalizability, and the use of self-reported measures creates the possibility of social desirability bias.

Conclusion

The polarity thinking training program increased nurses' knowledge of polarity thinking, their ability to apply polarity mapping steps and manage polarity situations, and their resilience and intra-professional collaboration. Immediate post-training gains were maintained and in most instances enhanced at three months follow-up indicating a long-term training effect. The positive correlations between knowledge, resilience, and collaboration are strong, which indicates that enhancing the polarity thinking knowledge of nurses can enable them to adjust, cooperate, and handle the complex work requirements more efficiently. These results justify the inclusion of polarity thinking training in nursing professional development to enhance individual and organizational performance.

Recommendations

For Hospital Administration

1. Incorporate polarity thinking training into orientation and in-service education for nurses.
2. Provide resources to support ongoing resilience, collaboration, and leadership skills training.

For Head Nurses

1. Promote polarity thinking strategies in unit meetings, problem-solving discussions, and decision-making.
2. Coach and mentor nurses in applying polarity mapping techniques in daily practice.

For Staff Nurses

1. Engage in continuing education on polarity thinking, resilience, and collaborative practice.
2. Apply polarity mapping tools to clinical and organizational situations involving conflicting priorities.

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