Application of Academic Salons in Cultivating the Scientific Research Skills of First-Year Nursing Master's Students

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Abstract: *Objective:* To explore the application effect of academic salons on developing the scientific research skills of first-year nursing master's students. *Methods:* According to Wallas' four-stage model of the creative process, from November 2022 to February 2023, 66 first-year nursing master's students from the School of Nursing at Zhejiang Chinese Medical University were selected using a convenient sampling method to participate in a multidisciplinary academic salon consisting of a total of 8 sessions held once every two weeks. Before the first and after the last academic salon, postgraduate research skills evaluation questionnaires and perception of research skills acquisition questionnaires were used to assess first-year nursing master's students. A semi-structured interview was conducted with nine students after the final academic salon. *Results:* The total scores for scientific research skills and sense of achievement among first-year nursing master's students after the academic salon were higher than those before the salon, and the difference was statistically significant. The interview results showed that the "salon theme," "tutor comments," and "sharer output" are the focus of the first-year nursing master's students in the academic salon. *Conclusions:* Academic salons can enhance postgraduate students' scientific research skills and foster a greater appreciation for scientific research. We can enhance academic salons by carefully choosing relevant themes, inviting knowledgeable presenters and expert tutors to provide feedback, and prioritizing equality and effective communication.

Keywords: Nursing; Postgraduate students; Academic salon; Scientific research skills

1. Introduction

Nursing postgraduate students' capacity for scientific research innovation is a critical component of the rapid development of the discipline. The advancement of nursing and the improvement of health care quality require a large number of advanced practice nurses with an innovative spirit [1]. The scientific research and innovation skills scores of the third, second, and first years of the master of nursing are presented in descending order. The development of scientific research and innovation skills among first-year nursing master's students needs

to be further enhanced [2]. Owing to the high degree of autonomy in postgraduate studies, innovative teaching strategies are continuously being experimented with. One such strategy is the creation of a forum for scholarly discussions and the exchange of ideas, which is a useful method of postgraduate education [3]. According to the theory of Wallas' four-stage model of the creative process, there are four phases involved in cultivating inventive thinking: preparation, incubation, illumination, and verification [4]. This study uses Wallas' theory of innovation to investigate the effectiveness of the present-day implementation of academic salons in the development of first-year nursing master's students. This research is motivated by the urgent necessity for first-year nursing master's students to improve their research capabilities. The aim is to provide advice for postgraduate nursing education.

2. Research subjects and methods

2.1. Research subjects

From November 2022 to February 2023, a total of 66 full-time master's degree students in nursing were selected at a higher Chinese medical university. Inclusion criteria: (1) first-year nursing master's students; (2) informed consent and voluntary participation; (3) individuals who have not engaged in academic salons since enrolling in postgraduate school. Exclusion criteria: (1) individuals on leave of absence; (2) participants who withdrew from the study during the study period. Following the conclusion of the final academic salon, relevant students were interviewed in a semi-structured manner using the purposeful sampling approach. The sample size was determined by ensuring that no new sub-themes were formed and that information saturation was achieved.

2.2. Research methods

According to Wallas' theory of innovation, the research program for the thematic academic salon was determined during the preparation stage. In the incubation stage, eight academic salons were established based on the postgraduate students' opinions and discussions among tutors. The research content themes included:

(1) Best evidence summary paper writing and submission experience sharing;

(2) Meta-analysis paper writing and submission experience sharing;

(3) Bibliometrics paper writing and submission experience sharing;

(4) Risk prediction model construction paper writing and submission experience sharing;

(5) Cross-sectional survey paper writing and submission experience sharing;

(6) Qualitative research paper writing and submission experience sharing;

(7) Scope overview paper writing and submission experience sharing;

(8) Utility model patents and computer software works application experience sharing.

During the illumination stage, the academic salon was led by the secretary of the postgraduate students. Representatives from the second and third-year postgraduate students shared their insights, while the first-year nursing master's students listened and asked questions. The postgraduate tutors provided comments at the end. Three students were invited to share in the academic salon. Each student shared for 20–30 minutes over a period of two weeks. The length of each session was approximately 1–1.5 hours, focusing mainly on the recently published papers of the speakers. In the verification stage, the effectiveness of the academic salon was verified through quantitative questionnaires and qualitative interviews.

2.3. Evaluation methods

2.3.1. Quantitative questionnaires

(1) General Information Questionnaire: Designed by the researcher herself, the content includes age,

gender, major, first degree, degree type, English proficiency level, work experience, published papers, project leadership experience, and the level of projects led.

(2) Questionnaire for Evaluating Postgraduate Research Competence in Nursing: The ability to conduct scientific research is a crucial component of the core competencies of nursing master's degree candidates. Jinxin Wang created a questionnaire that covered various topics, including problem identification (3 entries), literature review and evaluation (4 entries), scientific research design (4 entries), scientific research practice (5 entries), statistical analysis (3 entries), writing and dissemination of the paper competence (4 entries), and more. In total, there were 25 entries divided into 6 dimensions. The study employed a 5-point Likert scale, where scores ranged from 1 to 5, representing "completely disagree" to "completely agree." The higher the score, the greater the individual's research skills. The validity of the scale was 0.95, the test-retest reliability was 0.92, and the Cronbach's alpha coefficient was 0.93.

(3) Master's Degree Students' Perception of Research Skills Acquisition: Sense of access to scientific research refers to the perception and evaluation of master's degree students regarding the value and external support of the scientific research activities they are involved in. The questionnaire was developed by Yang et al. [5] and encompasses two dimensions: objective access perception (4 items) and value perception (5 items), totaling 9 items. A 5-point Likert scale was used, with scores ranging from 1 to 5, indicating levels from "not at all" to "completely." The higher the score, the greater the individual's sense of access to research. The internal consistency coefficient of the scale was 0.854, and the Cronbach's alpha coefficient was 0.857.

(4) Data collection: The questionnaires were distributed and collected through the online platform before and after the 8th academic salon. The entered data was verified by two researchers to ensure accuracy.

2.3.2. Qualitative interviews

(1) Interview outline: Using descriptive qualitative research, semi-structured interviews were conducted with the aim of understanding the experiences and suggestions of nursing research students regarding this series of academic salons. The outline of the interviews was as follows: (a) What are your feelings or comments about participating in this series of academic salons? (b) What are your primary concerns about participating in the academic salon? (c) Do you still want to participate in this series of academic salons? Why? (d) What other suggestions do you have for this series of academic salons? The actual interview was not limited by the outline; instead, it was based on the thoughts of the interviewed students, collecting their experiences and feelings.

(2) Interview implementation: Following the completion of the questionnaire survey, information was gathered through semi-structured, in-depth interviews. The interviews were conducted in a quiet conference room and other settings, lasting between 20 and 40 minutes for each interviewee. The entire process was recorded with the interviewee's permission. Without purposefully directing the interviews or imposing their own beliefs on the participants, the methods of inspiration and guidance were employed to enable the interviewees to express their feelings and opinions more elaborately.

2.4. Analysis methods

The measurement data were reported as mean ± standard deviation (SD), and the questionnaire data were obtained using the statistical software SPSS26.0. The two independent samples t-test was used to compare the research skills scores before and after the 8-session academic salon. The chi-square test was used to compare

the scores of research acquisition sense, and the difference was deemed statistically significant at $P < 0.05$. Within 48 hours, the audio recordings of the interviews were converted into text transcriptions of the interview data, which were then subjected to traditional content analysis.

3. Results

3.1. General information of research subjects

A total of 66 individuals ultimately took part in this series of academic salons during the entire study. This group comprised 23 students and 43 professional master's students, with 6 male students and 60 female students, with an average of 23.86 ± 1.28 years old. The effective recovery rate for both questionnaires was 100%. In the end, nine first-year nursing master's students were interviewed. Interviewees were numbered "S1" to "S9" to protect their privacy, and general information was presented in **Table 1**.

3.2. Comparison of research skills scores of research subjects before and after the academic salon

As depicted in **Table 2**, the total research skills score of first-year nursing master's students after the academic salon (79.42 ± 11.83) was higher than the score before the academic salon (68.41 ± 10.87). This difference was statistically significant ($t = -4.994$, $P < 0.001$). Moreover, all dimension scores were higher after the academic salon compared to before, and these differences were statistically significant.

3.3. Comparison of research acquisition scores of research subjects before and after academic salon

As shown in **Table 3**, the total score of the first-year nursing master's students' sense of access to research after the academic salon (31.18 ± 4.10) was higher than the score before the academic salon (28.91 ± 3.83). This difference was statistically significant ($t = -2.942$, $P = 0.004$). Additionally, the scores of the dimensions after the final academic salon were higher than the scores before the academic salon, and this difference was also statistically significant.

3.4. Interview results

Two themes emerged from the data collection and coding process: the experience of attending the academic salon series and recommendations for future academic salon series.

3.4.1. Theme 1: Experiential aspects

(1) Cognition and gains:
   (a) Expanding scientific research ideas. S6: "After attending the academic salon, I engaged in more in-depth study, which helped clarify my scientific research ideas through the exchange." S2: "I seek exposure to learn about topics I am unfamiliar with and various types of academic papers."
   (b) Tutor's summary and guidance. S1: "Mr. C summed it up well, particularly highlighting the importance of investigative research to emphasize the rigor of the research method."
   (c) Focusing on the output of the sharer. S3: "Sister L is great for publishing two papers in the Chinese Nursing Journal." S9: "I am more concerned about the dissemination of SCI papers, and I aim to publish them promptly."
(2) Willingness and evaluation:
   (a) Positive feedback: The majority of students (n = 9) in this study expressed their intention to

Table 1. General information about the students interviewed

Respondents	S1	S2	S3	S4	S5	S6	S7	S8	S9
Gender	Female	Female	Male	Female	Female	Female	Female	Female	Male
Master degree type	Academic	Academic	Academic	Academic	Professional	Professional	Professional	Professional	Professional
First degree	Undergraduate	Undergraduate	Undergraduate	Undergraduate	Junior college	Undergraduate	Undergraduate	Undergraduate	Undergraduate
English level	CET-6	CET-6	CET-6	CET-4	CET-6	CET-6	CET-6	CET-4	CET-4
Work experience	No	Yes	Yes	No	Yes	No	No	No	No
Published papers	Yes	Yes	Yes	No	No	No	No	No	No
Project leadership experience	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Project level	University level	University level	University level	-	-	-	-	University level	University level

Table 2. Comparison of research skills scores of research subjects before and after the academic salon

Dimension score and total score	Before	After	t	P
Ability to identify problems	8.41 ± 1.50	9.68 ± 1.80	-3.973	< 0.001
Ability to access and evaluate literature	12.66 ± 2.23	14.20 ± 2.04	-3.696	< 0.001
Ability to research and design	16.88 ± 3.25	19.42 ± 3.56	-3.844	< 0.001
Ability to practice scientific research	11.93 ± 2.95	14.54 ± 3.03	-4.493	< 0.001
Ability to perform statistical analyses	8.30 ± 1.76	9.22 ± 1.67	-2.744	0.007
Ability to write and disseminate papers	10.23 ± 2.04	12.36 ± 2.41	-4.922	< 0.001
Total score	68.41 ± 10.87	79.42 ± 11.83	-4.994	< 0.001

Table 3. Comparison of research acquisition scores of research subjects before and after academic salon

Dimension score and total score	Before	After	t	P
Objective acquisition of cognition	12.23 ± 2.29	13.50 ± 2.14	-2.935	0.004
Value cognition	16.68 ± 2.35	17.68 ± 2.43	-2.155	0.033
Total score	28.91 ± 3.83	31.18 ± 4.10	-2.942	0.004

participate in the academic salon again. S5 stated: "I would like to engage in this type of activity in the future." S8: "It was very useful. I hope it can be organized every session." S7: "It is quite good. I hope I will have the opportunity to participate and share in my second year of study."

(b)   Negative sentiment: There were also perceived difficulties in participating in academic salons. S4: "It is quite challenging to ask a good question; you need to have some knowledge about these types of articles." S7: "Effective sharing and debriefing are valuable exercises in expression that require thorough preparation in advance." S1: "It takes courage and confidence to share because good selections can be dismissed very quickly."

3.4.2. Theme 2: Suggested aspects
(1)   Frequency and form:
    (a)   Students tended to increase in frequency. S4: "The frequency can be increased." S6: "I suggest 2 times in 1 month." S4: "It is recommended to do this every two weeks to once a month."
    (b)   Both online and offline formats were preferred by students. S8: "I would like to increase interaction in an offline format." S7: "It is easy to conduct it online and also provide academic playback videos."

(2)   Topics and content:
    (a)   Research methods. S5: "I hope the seniors can share their experience with clinical randomized controlled trials." S6: "I also want to learn about the use of public databases and related information." S3: "I would like to learn about interviewing techniques to improve communication with the interviewee during qualitative interviews."
    (b)   Practical orientation of content. S1: "I hope the discussion can focus more on the challenges encountered in thesis writing that cannot be resolved through literature review alone." S9: "I hope for more detailed information rather than generalizations." S2: "Please provide a detailed explanation of the specific process, including how to search, filter, and evaluate the evidence summary."

4. Discussion
4.1. Enhancing the research skills of research students
Currently, there is a lack of consistency in the quality of nursing master's degree programs. Students lacking these credentials exhibit low levels of academic communication, a lack of enthusiasm for self-directed learning, difficulty in searching, organizing, and analyzing literature, and challenges in expressing themselves in language [6]. This study found that research students' research skills can be enhanced by academic salons, which is consistent with the study by Zhang *et al.* [1]. They demonstrated that postgraduate students' research innovation ability is stronger when academic salons are more efficient. Additionally, research skill is correlated with the frequency of participation in academic salons; postgraduate students who regularly engage in academic discussions and lectures have higher research skills than those who do so infrequently [1]. Zeng *et al.* demonstrated that academic seminar-based teaching is an effective approach to enhancing students' knowledge scores, skill levels, and active learning skills [7]. Zhang *et al.* proposed that Xiangya Hospital conduct academic salon activities on the WeChat platform to facilitate real-time online communication and replay of review content, aiming to enhance students' scientific thinking [8]. In this study, we conducted a series of academic salon activities focused on knowledge sharing and communication. We provided academic replay videos for repeated viewing and learning, effectively enhancing the scientific research skills of the participating students.

4.2. Improving the perception of research skills acquisition for first-year nursing master's students

The concept of research acquisition refers to the ability to access research materials and information in the research field. Focusing on developing master's degree students' research access can enhance their research skills and output. After the 8th academic salon in this study, the scores reflecting research students' sense of access to research improved to varying degrees. The results of objective access perception and value perception among students showed an increase in their perceptions of external research support from peers, teachers, and the school. Additionally, there was a rise in their recognition of the importance of research assignments and activities. The social media-based "Internet+" academic communication mode, as described by Zhang *et al.* [3], fosters teacher-student interaction, creates a more autonomous and dynamic academic environment, and is a valuable addition to conventional academic communication methods. Currently, master's degree students are required to participate in a specific number of domestic and international academic activities, as well as postgraduate student seminars and exchanges. The vast majority of colleges and universities have specific requirements for postgraduate academic activities. However, the current academic salon seminars focus more on subject groups rather than on the discipline as a whole. The participation of the main body of students and peer group communication still lacks attention [9]. In order to cultivate a robust research environment by promoting collaboration among teachers and students, as well as among students themselves, this series of academic salons is designed to connect individuals across different grade levels. This will enable postgraduate students to actively participate in research activities, leading them to feel acknowledged and supported.

4.3. Challenges encountered in the application of academic salons in the research activities of nursing master's student groups

Nursing postgraduate students are eager to enhance their research awareness and innovative abilities in response to the perceived pressure of internal competition and the escalating graduation criteria for master's degree programs in nursing [10]. To enhance the efficacy of academic salons, the following obstacles and issues still need to be addressed. The main concerns of first-year nursing master's students in the academic salon were the "salon theme," "tutor comments," and "sharer output," as revealed by the interview findings. First and foremost, choosing a topic is essential for the academic discourse, marking the most crucial and initial stage of the entire research process [11]. Students' satisfaction with the selected topic will rely on the relevance of the academic salon theme to their participation in scientific research activities as candidates pursuing a master's degree in medicine [7]. The focus of this salon series is to enhance writing skills related to various literary genres, thereby broadening the range of topic selection options for first-year nursing master's students. Based on the results of the interviews, it is evident that first-year nursing master's students are eager to participate in academic salons but have specific expectations regarding the topics they have chosen. Secondly, the foundation for the efficient operation of academic salons is based on equal respect, tolerance, and acceptance. In this study, students focused more on the sharers' work and the tutors' summaries of their comments. They also proposed guidelines for the participants' own questions, implying that everyone in the academic salon—presenters, participants, and commenting tutors—should treat one another with respect and communicate effectively. A one-hour academic salon with fewer than twenty attendees can foster a sense of participation and active listening among clinical practice nurses. It can also promote collaboration, communication, and professional development, as well as aid in the dissemination of scientific ideas, as demonstrated by Hodge *et al.* [12]. Furthermore, some of the study's participants and sharers exhibited lower levels of motivation and a tendency to intentionally conceal or disguise their knowledge-hiding behaviors. This behavior may be attributed to internal competitiveness and pressure from research [13]. As a result, to establish a positive feedback loop, integrating academic salons

into postgraduate students' training programs requires attracting outstanding contributors through incentives, encouraging participants' independent learning and communication, providing tutors with feedback on tailored instruction, and evaluating the results [14,15].

5. Conclusion

The use of discipline-based and cross-grade thematic academic salons improved the research access and skills of first-year nursing master's students in this study. This practice should be promoted and implemented more widely. By selecting appropriate salon topics and schedules and inviting outstanding presenters and qualified criticism tutors, academic salons can be optimized in the future. The effectiveness of academic salons should be thoroughly investigated in the future from the perspectives of both the presenters and reviewing tutors. This study exclusively focuses on the students who participate in it as research subjects.

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Disclosure statement

The authors declare no conflict of interest.

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