Original Article

Perceptions of nursing graduates regarding artificial intelligence interviews: A Q-methodology study

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ABSTRACT

Background & Aim: The integration of Artificial Intelligence (AI) in recruitment processes is increasingly prevalent, particularly within medical institutions. AI interviews are becoming a common practice, and their impact on the perceptions and experiences of candidates is a subject of growing interest. Nursing graduates, who are often at the forefront of medical practice, frequently encounter these AI-driven evaluations during their job searches. This study attempted to examine the perception of AI interviews among nursing graduates who have experienced AI interviews in medical institutions.

Methods & Materials: The Q-methodology was applied by selecting 34 Q samples from the 102 concourses extracted through a literature review and in-depth clinical interviews with nursing graduates. The P sample consisted of 35 nursing graduates who had experienced AI interviews. Data were collected using the PQ Method's Q-methodology program, measured on a 9-point scale frame, and Q samples were normally distributed.

Results: The study identified four factors of perception: Proactive AI Interview Preparation, Negative Perception of AI Interviews, Positive Perception of AI Interviews, and Critical Acceptance of AI Interviews.

Conclusion: In conclusion, perceptions of AI interviews can be categorized into four main types, highlighting both the positive and negative aspects of this technology. The positive aspects include efficiency, fairness, and convenience, while the negative aspects involve concerns about privacy, bias, and the lack of human elements. To design AI interview programs tailored to specific job roles, it is crucial to balance these pros and cons. Additionally, reducing the burden of AI interviews through informative resources and pre-training programs is essential. For successful implementation, ongoing improvements, transparency, and a balanced integration of human judgment are necessary.

Introduction

Artificial Intelligence (AI) has swiftly become a pivotal technology, driven by the impact of the Fourth Industrial Revolution. Efforts are underway to integrate AI into diverse fields including medicine, economics, education, meteorology, and law (1). AI is currently defined in various ways, but it generally involves granting computers the authority to perform tasks that require cognitive capabilities originating from human intelligence (2).

The COVID-19 pandemic has ushered in significant changes in corporate recruitment, with the incorporation of AI technology into the hiring process. AI technology in recruitment can be divided into two main categories: AI resume analysis and AI interviews (3). AI resume analysis encompasses AI-based evaluation of resumes or recruitment documents, while AI interviews and competency assessments involve utilizing AI for conducting interviews and evaluating competencies (4-5). Since the end of 2019, there has been a notable increase in companies transitioning their recruitment processes online, with many incorporating AI interviews. A survey conducted in 2021 revealed that out of 10 companies, 37.3% (4 companies) utilized non-face-to-face interviews (6). Notably, among large corporations, 80.4% are conducting non-face-to-face recruitment processes, indicating the continued spread of non-face-to-face interviews even as the

COVID-19 pandemic situation gradually improves (6).

Artificial intelligence interviews conducted in South Korea involve asynchronous interviews conducted through the collection of video and audio information, allowing for cost savings and a reduction of time spent on hiring interview personnel. They also increase interview accessibility and flexibility for candidates residing in other regions. Moreover, they maintain consistency in interview questions and structure and offer the advantage of adjusting questions based on the company's recruitment objectives (7). However, criticisms are pointing out several drawbacks. These include applicants' unfamiliarity with interview analysis via video, imperfect technology and data used in AI interviews, unclear biases and accountability due to various factors, and technical limitations (8). Additionally, certain groups may experience discriminatory outcomes based on race, gender, age, or other characteristics. Programs that can help identify and mitigate bias in AI systems need to be developed, ensuring the creation of AI interview programs that guarantee objectivity and completeness. Implementing ethical guidelines and regulatory standards for AI use in recruitment can provide a framework for fair and accountable practices (7). This includes setting standards for transparency, data privacy, and non-discrimination (7). According to research conducted on candidates who have undergone AI interviews so far, candidates generally find the evaluation criteria of AI competency tests to be trustworthy and fair (8). The second opinion is negative regarding whether AI assesses them accurately (8). The third opinion is that while they generally trust AI interview recruitment, they feel a significant burden during the AI interview process (8). The reasons for feeling burdened include the uncertainty of evaluation standards, lack of prior information about the interview, distrust in AI interview technology, and resistance to being evaluated by artificial intelligence, in that order (9). In a study conducted on university students, concerns about AI interviews included worries about not being able to respond quickly to interview questions, the inability to observe the interviewer's reactions, technical anxiety, and concerns about the absence of non-verbal communication (1). These concerns related to technology and evaluation standards also included fears of being disadvantaged due to the lack of interpersonal interaction (10).

Although large corporations are adopting AI in their recruitment processes for efficiency reasons, university students fear many adverse effects if AI interviews are unilaterally implemented without proper awareness or preparation for AI interviews (11). AI interviews are based on given data and proceed through a series of interviews regardless of the recruitment field. In particular, applicants in specialized fields might be evaluated based on general data in a pre-interview format without being interviewed in their area of expertise, potentially missing the opportunity for additional interviews (10). Furthermore, the bias in the database that AI relies on cannot be corrected by AI itself and may even be reinforced. There is also a risk that candidates with novel talents not found in existing data may be excluded (11).

Assessing various job positions through AI interviews based on general data poses a high risk of errors. This is especially true for job positions related to health, where human-to-human communication is crucial, such as nursing, where specialized education different from the general public is provided by the university (12). Instead of AI interviews that rely on mechanical communication based on existing data, face-to-face interviews that allow for both verbal and non-verbal communication should be conducted. However, since most candidates need to pass the AI interview to have the opportunity for a face-to-face interview, preparation for AI interviews is necessary (13). Therefore, it would be highly meaningful to conduct research on the perception types of AI interviews experienced by nursing students, provide specific information about AI interviews, reduce their burden, and improve their adaptability through mock training. This study aims to assess the perception of nursing graduates who have experienced AI interviews in healthcare institutions.

Methods

Design

This study is a Q methodology study to identify the types of perceptions and characteristics

according to types of AI interviews of nursing college graduates.

Sample size

Instrument development

The concourse was developed through a literature review and in-depth individual interviews. The literature review was conducted using academic journals and dissertations provided by the Korea Education and Research Information Service, as well as CINAHL and PubMed. Studies published after 2000, both domestic and international, were included without limitation to the field of nursing, using search terms such as "AI interviews" and "AI interview experiences." In this process, A Study on the Perceptions of High School Students on AI interviews for University Admission (14), A Study on the Validity of the AI Interview in the ROKAFA Admission Test (15), A Study on the Contents of AI Interview Training Based on University Student Perception (16) Content related to experience and perception of AI interviews was taken from literature such as. From this process, 100 statements related to AI interview experiences were extracted from the literature. The selected statements were reviewed for redundancy, validity, and accuracy of expression after consulting with two nursing professors experienced in Q methodology and one individual with over 30 years of experience at a tertiary hospital who has undergone an AI interview. The statements were repeatedly read and categorized by grouping those that were thought to share common meanings or values according to their themes. To select a systematic and comprehensive Q sample from the Q population, 35 meaningful statements were referred to as a result of analyzing the interview experience in a focus group study (10) on the Artificial Intelligence interview experience of nursing students in the COVID-19 situation.

Individual in-depth interviews were conducted with nurses who had experienced AI interviews, from March 1 to April 14, 2023. The participants included 50 nurses selected through purposive and snowball sampling methods, working in two tertiary hospitals and one general hospital located in a metropolitan area. The participants were nurses with experience in AI interviews.

The interview questions included: "What was your experience with AI interviews?", "What do you think is important to be aware of during an AI interview?", and "Can you describe what is necessary to achieve a good result in an AI interview?" Each individual in-depth interview took approximately 30 minutes to one hour, and the interviews were recorded and documented with the participants' consent. To ensure the smooth administration of the questionnaire, the snowball sampling method was used. Although an attempt was made to form a new focus group for individual in-depth interviews, the responses to the open-ended questions reached the saturation point. To gain a deeper understanding of personal views and thoughts on AI interviews, interviews were conducted with 50 respondents who answered open-ended questions. With the nurses' consent, the interviews were recorded and transcribed. Through this process, a total of 90 statements were extracted (18).

The concourse

Combining the statements derived from the literature review and individual in-depth interviews, a total of 80 statements were created after organizing and removing repetitive or similar ones. Using a content classification table, a systematic and comprehensive Q sample was selected from the concourse. Additionally, statements that did not fit into these categories but were frequently mentioned as important were separately organized and included. The Q sample was constructed by integrating and organizing statements with similar meanings to create mutually exclusive statements. The construction of the Q sample is a crucial procedure in Q methodology research, as it summarizes and compresses the breadth and depth of the content included in the Q population, thereby representing the Q population and serving as a unit of analysis (18-19).

First, the statements in the concourse were categorized into four categories: positive, neutral, and negative responses. The balance of the composition ratio of statements was adjusted based on the number of statements included in the concourse. This process was repeated several

times to integrate and condense statements with similar or redundant meanings. To select the Q sample, the prepared concourse was repeatedly read and categorized. The selected statements were reviewed for content duplication, validity, and accuracy of expression by two nursing professors with extensive experience in Q research and one individual with over 30 years of experience in a tertiary hospital who had participated in AI interviews. Based on this, the researcher categorized statements with common meanings or values by repeatedly reading the concourse while considering the current AI interview experiences. After two email meetings and two discussions, redundant or ambiguous expressions were removed, and similar items were integrated. Finally, 34 Q samples were selected.

Selection of participants (Selection of P sample)

In this study, the P sample consisted of nursing graduates from Seoul and Gangwon Province who responded earnestly to the questions relevant to the Q survey from December 1 to December 30, 2023. A total of 35 responses were selected by the researcher, deemed to align with the objectives of the study. Additionally, to include a diverse range of participants, factors such as the respondents' age, gender, and number of AI interview experiences were considered.

Data collection through Q sorting

According to the principles of Q methodology, the participants were asked to distribute the 34 selected statements in a forced distribution based on their personal perceptions and judgments. Before beginning the Q-sorting process, participants were given a brief explanation of the research topic. They were then instructed to read the statements written on the Q cards and initially sort them into positive, neutral, or negative categories. After this initial categorization, participants refined their sorting by repeatedly reading the statements on each Q card. Statements they agreed with were placed to the right, those they disagreed with to the left, and neutral statements were positioned in the middle. During this process, for the four statements placed at the extremes of the scale (+4, -4), interviews were conducted and recorded to document the reasons for their selection, as these provide valuable information for interpreting the Q Factors (14-15) (Figure 1). The collected data was scored starting from 1 point for the statements considered 'most negative' (-4) up to 9 points for those deemed 'most positive' (+4).
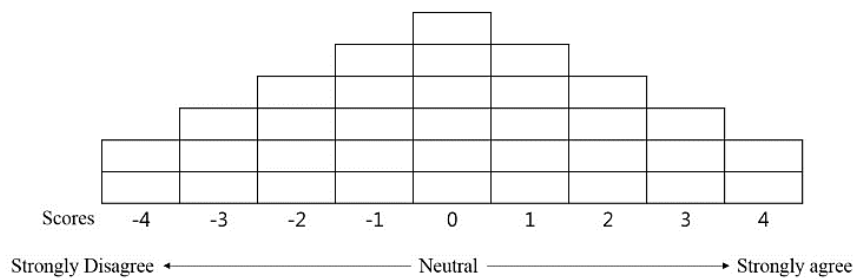

Figure 1. A Q-sort table

Statistical analysis method

The score table derived from the Q sorting was analyzed using the PQ Method Program Program to conduct typological analysis. For the most ideal decision, the number of factors was varied, using an eigenvalue of 1.0 as the criterion, and based on the results obtained, four factors were selected that were deemed to have significant conceptual meaning and discriminative power. In this study, we primarily compared and analyzed Factor loadings and z-scores for items that showed strong positive and negative responses for each Factor. Furthermore, demographic and sociological data from the P sample for the four Factors and characteristics of participants with high Factor loadings for each Factor were used to interpret the attributes of each Factor.

Ethical considerations

Participation in the study is based on voluntary consent. Participants were informed of their right to not participate if they did not wish to and their right to withdraw from the study at any time without any penalty. The data collected for the study is anonymized and used solely for research purposes,

and participants were assured that no personal information would be disclosed even when reported in academic journals. The collected data is managed by serial numbers in the order of data collection, ensuring that personal information remains confidential in any reports or publications resulting from this research. The data will be stored in the principal investigator's private archive, accessible only to the researcher, to prevent personal information leakage. Participants were informed that the data would be shredded and disposed of once the research was completed. Coded electronic data will be stored on an encrypted external hard drive for three years before being destroyed. Participants were also informed that they would receive a gift card as a token of appreciation for completing the survey.

Results

Formation of factors

Four factors were identified using QUANL to analyze the AI interview experiences of nursing graduates. These four factors s explained 37% of the total variance, with the explanatory power distributed as follows: factor 1 accounted for 20.0%, factor 2 for 15.0%, factor 3 for 9.1%, and factor 4 for 6.0% (Table 1). The correlations between factors ranged from r= .01 to .48. The correlation between factor 1 and factor 2 was the lowest at r= .01, while the correlation between factor 1 and factor 3 was the highest at r= .48 (Table 2).

Table 1. Factors, eigenvalues, variance, cumulative, factor weight, and demographic characteristics for P-sample (N=35)

Factor	Eigenvalues, Variance (%), cumulative	No.	Factor weight	Gender	Nursing program satisfaction	Clinical practice satisfaction	AI interview satisfaction
Factor 1 (N=15)	Eigenvalues 7.17 Variance 20.01 Cumulative 0.20	14	0.87	Female	Satisfied	Satisfied	Not Satisfied
		22	0.42	Female	Satisfied	Satisfied	Satisfied
		30	1.45	Female	Satisfied	Satisfied	Satisfied
		26	0.75	Female	Satisfied	Satisfied	Satisfied
		23	2.27	Female	Satisfied	Satisfied	Satisfied
		18	0.73	Male	Satisfied	Satisfied	Satisfied
		27	0.50	Female	Satisfied	Satisfied	Satisfied
		24	1.46	Female	Satisfied	Satisfied	Satisfied
		12	1.25	Female	Satisfied	Satisfied	Satisfied
		35	1.50	Male	Satisfied	Satisfied	Satisfied
		31	0.77	Male	Satisfied	Satisfied	Not Satisfied
		25	4.14	Male	Satisfied	Satisfied	Not Satisfied
		13	0.89	Female	Satisfied	Satisfied	Not Satisfied
		28	3.74	Female	Satisfied	Satisfied	Not Satisfied
		19	1.21	Male	Satisfied	Satisfied	Satisfied
Factor 2 (N=9)	Eigenvalues 3.21 Variance 15.01 Cumulative 0.29	34	1.00	Male	Satisfied	Satisfied	Satisfied
		33	0.38	Female	Satisfied	Satisfied	Satisfied
		20	0.63	Female	Satisfied	Satisfied	Not Satisfied
		15	0.63	Female	Satisfied	Satisfied	Not Satisfied
		17	0.84	Female	Satisfied	Satisfied	Not Satisfied
		21	0.19	Female	Satisfied	Satisfied	Not Satisfied
		16	0.45	Female	Satisfied	Satisfied	Satisfied
		32	0.42	Female	Satisfied	Satisfied	Satisfied
		2	0.46	Female	Satisfied	Not Satisfied	Satisfied
Factor 3 (N=6)	Eigenvalues 1.62 Variance 9.10 Cumulative 0.34	6	0.56	Male	Satisfied	Not Satisfied	Not Satisfied
		7	0.61	Male	Satisfied	Satisfied	Not Satisfied
		3	1.33	Female	Satisfied	Not Satisfied	Satisfied
		8	0.32	Male	Satisfied	Not Satisfied	Not Satisfied
		29	0.51	Male	Satisfied	Satisfied	Satisfied
		1	0.91	Female	Satisfied	Satisfied	Satisfied
Factor 4 (N=5)	Eigenvalues 1.58 Variance 6.01 Cumulative 0.38	5	0.19	Male	Satisfied	Not Satisfied	Satisfied
		11	0.87	Female	Not Satisfied	Satisfied	Not Satisfied
		4	0.73	Female	Satisfied	Not Satisfied	Satisfied
		9	0.52	Female	Satisfied	Not Satisfied	Not Satisfied
		10	0.58	Female	Not Satisfied	Satisfied	Not Satisfied

Table 2. Correlation matrix between factors (N=35)

Variables	Factor I	Factor II	Factor III	Factor IV
Factor I	1			
Factor II	.01	1		
Factor III	.48	.04	1	
Factor IV	-.17	.23	.06	1

Characteristics by factor

The distribution of participants was as follows: factor 1 included 15 individuals, factor 2 included 9, factor 3 included 6, and factor 4 included 5. Demographic characteristics and factor weights for each are described in Table 1. A higher factor weight within a Factor indicates that an individual more strongly exhibits the typical characteristics of that factor.

For the analysis of nursing students' AI interview experiences by factor, the characteristics of each factor were described based on the 34 statements listed in Table 3, focusing on items that participants agreed with either positively (Z score +1.00 or higher) or negatively (Z score –1.00 or higher). Additionally, particular emphasis was placed on items where there was a significant difference between the standard scores of a specific factor and the average and standard scores of other factors. The Q items and Z-scores (±1.00) for each factor are presented in Table 4.

Factor 1: Proactive AI interview preparation

Out of the total 35 participants, 15 were found to belong to factor 1. Among them, 5 reported as 'Not Satisfied' with their AI interview experience, while 10 expressed 'Satisfaction'.

In factor 1, the items that received the strongest agreement were "Practice is necessary through an AI interview training program (Z=2.01)" and "Used AI interview experience sites to practice interviews in advance (Z=1.80)." Conversely, the items that factor 1 participants most strongly disagreed with were "Prepared for AI interviews by sharing experiences in open chat rooms (Z=-2.00)" and "It is necessary to have time to practice for the AI interview and to attend the interview when one feels prepared (Z=-1.79)" (Table 3).

Additionally, the item for which factor 1 showed significantly stronger agreement than factor 2, with a standard score difference of +1.00 or more, was "Was able to accurately understand and prepare for the AI interview (Z=1.49)." The item that showed significantly stronger disagreement compared to factor 2, with a score difference of -1.00 or more, was "Felt unjustly treated during the AI interview (Z=-1.588). The item for which factor 1 showed significantly stronger agreement than factor 3, with a standard score difference of +1.00 or more, was "Felt that honest and consistent answers are important in an AI interview (Z=2.08)." Conversely, the item that showed significantly stronger disagreement with factor 3, with a score difference of -1.00 or more, was "Felt that the interview is not suitable for nurses (Z=-1.73)." The item that showed significantly stronger agreement between factor 1 and factor 4, with a standard score difference of +1.00 or more, was "Felt that honest and consistent answers are important in an AI interview (Z=2.08)." Conversely, the item that showed significantly stronger disagreement with factor 4, with a score difference of -1.00 or more, was "Had no idea about the outcome during the AI interview (Z=-1.99)." Based on these results, Factor 1 is actively preparing for AI interviews by using AI interview experience sites to practice in advance, accurately identifying their weaknesses, and engaging in repeated practice to ensure consistent responses. They also proactively understand the characteristics of AI interviews in preparation. Consequently, they have been named the "Proactive AI Interview Preparation Factor."

Table 3. The Q-statements and Z-scores (±1.0) by the perception factor (*N*=35)

Factor	Q-statement	Z-score
Factor 1 **Proactive** **AI** **Interview Preparation**	33. Practice is necessary through an AI interview training program.	2.01
	6. Used AI interview experience sites to practice interviews in advance.	1.50
	29. Creating a good internet environment is important for AI interviews.	1.46
	24. Believes that using positive or optimistic words increases the chances of passing an AI interview.	1.38
	11. AI interviews save time.	1.16
	26. It is necessary to speak confidently, even if you make mistakes during an AI interview.	1.10
	31. Equipment for AI interviews (webcam, microphone, and lighting) is important.	1.08
	34. There is a need to develop a system that includes nursing job interviews in AI interviews.	-1.24
	25. Felt that honest and consistent answers are important in an AI interview.	-1.59
	1. It feels overwhelming to figure out how to pass an AI interview conducted by artificial intelligence.	-1.62
	28. It is necessary to have time to practice for the AI interview and to attend the interview when one feels prepared.	-1.79
	8. Prepared for AI interviews by sharing experiences in open chat rooms.	-2.00
Factor 2 **Negative Perception of** **AI Interviews**	22. Felt like betraying the expectations of family and friends during the AI interview.	1.85
	30. Felt unjustly treated during the AI interview.	1.53
	17. There is no chance to correct mistakes during an AI interview.	1.23
	18. Had no idea about the outcome during the AI interview.	1.22
	13. It was difficult to organize thoughts and speak during the AI interview.	1.14
	20. Felt that the interview is not suitable for nurses.	1.04
	12. The AI interview was very nerve-wracking.	-1.26
	27. Was able to understand and prepare for the AI interview accurately.	-1.52
	10. It served as an opportunity to develop quick thinking skills.	-1.65
	16. Felt disappointed for not being able to demonstrate all competencies during the AI interview.	-1.72
	21. Doubted the fairness of the evaluation results after the AI interview.	-1.74
	15. Self-esteem declined during the AI interview.	-1.81
Factor 3 **Positive Perception of AI** **Interviews**	9. The AI interview was a novel experience, different from other Factors of interviews.	1.95
	4. It served as an opportunity to develop quick thinking skills.	1.76
	11. AI interviews save time.	1.28
	23. AI interviews can select candidates more objectively than humans.	1.18
	2. The questions during an AI interview are diverse and extensive.	1.12
	20. Felt that the interview is not suitable for nurses.	1.03
	17. There is no chance to correct mistakes during an AI interview.	1.00
	7. Maintaining a poker face during an AI interview is challenging.	-1.15
	22. Felt like betraying the expectations of family and friends during the AI interview.	-1.18
	5. It is difficult to accept the results of an AI interview as they seem to be based on the subjective judgment of the AI interviewer.	-1.40
	12. Felt less nervous as it was an AI interview.	-1.43
	3. Appreciate being able to schedule the interview to fit my own timetable.	-1.64
	27. Was able to accurately understand and prepare for the AI interview.	-1.90
Factor 4 **Critical Acceptance of AI** **Interviews**	19. Questioned what the AI interview was evaluating.	1.85
	14. Continued skepticism about the results of the AI evaluation.	1.45
	27. Was able to understand and prepare for the AI interview accurately.	1.33
	9. The AI interview was a novel experience, different from other Factors of interviews.	1.19
	20. Felt that the interview is not suitable for nurses.	1.14
	25. It is necessary to speak confidently, even if you make mistakes during an AI interview.	1.07
	34. There is a need to develop a system that includes nursing job interviews in AI interviews.	-1.25
	21. Doubted the fairness of the evaluation results after the AI interview.	-1.30
	32. Had no idea about the outcome during the AI interview.	-1.63
	5. Distrust in the interview evaluation's reliability.	-2.06

Table 4. Consensus items and average Z-scores (*N*=35)

Q-statement		Z-scores
Q16	Felt disappointed for not being able to demonstrate all competencies during the AI interview	1.06

Factor 2: Negative perception of AI interviews

Out of the total 35 participants, 9 were categorized under factor 2. Among them, 4 participants reported dissatisfaction regarding their experience with AI interviews, while 5 expressed satisfaction.

In Factor 2, the statements with the highest level of agreement were: "Felt like betraying the expectations of family and friends during the AI interview (Z=1.85)" and "Felt unjustly treated during the AI interview (Z=1.53). Conversely, the items that received the most negative agreement in factor 2 were "Self-esteem declined during the AI interview (Z=-1.81)" and "Doubted the fairness of the evaluation results after the AI interview (Z=-1.74)" (Table 3).

Additionally, Factor 2 exhibited a significantly stronger agreement, with a standard score difference exceeding +1.00, on the item "It was difficult to organize thoughts and speak during the AI interview (Z=1.53)" compared to Act 3. In contrast, the item "Felt like betraying the expectations of family and friends during the AI interview (Z=-1.73)" received significantly stronger negative agreement in factor 2, with a score difference of -1.00 or more, compared to factor 3. The item "Had no idea about the outcome during the AI interview (Z=1.53)" showed a strong agreement with a standard score difference of more than +1.00 between factor 2 and factor 4. Conversely, the item "Self-esteem declined during the AI interview (Z=-1.81)" showed a strong negative agreement in factor 2 compared to factor 4, with a score difference exceeding –1.00. Considering these results, factor 2 individuals appear to have a negative perception of AI interviews due to difficulties with the non-interactive, remote nature of the interviews and a sense of self-blame for not being able to demonstrate their abilities. Therefore, they have been designated as the "Negative Perception of AI Interviews" factor.

Factor 3: Positive perception of AI interviews

Out of the total 35 participants, 6 were observed to belong to factor 3. Among these, 3 were 'Not Satisfied' and 3 were 'Satisfied' with their AI interview experience.

In Factor 3, the statements that garnered the most positive responses were: "The AI interview was a novel experience, different from other factors of interviews (Z=1.95)" and "It served as an opportunity to develop quick thinking skills (Z=1.76)." Conversely, the statements with the strongest negative responses were: "Was able to accurately understand and prepare for the AI interview (Z=-1.90)" and "Appreciated being able to schedule the interview to fit my own timetable (Z=-1.64)" (Table 3).

Moreover, in comparison to factor 4, factor 3 exhibited significantly stronger agreement, with a standard score difference exceeding +1.00, on the belief that "AI interviews can select candidates more objectively than humans (Z=1.95)." On the other hand, the statement that received significantly stronger negative responses from factor 3 than factor 4 was "Felt less nervous as it was an AI interview (Z=-1.75)." Based on these results, Factor 3 nursing students displayed curiosity about AI interviews and a positive acceptance of this novel interview format, which differs from traditional methods. They have embraced the advantages of AI interviews well, leading to their classification as the "Positive Perception of AI Interviews" Factor.

Factor 4: Critical acceptance of AI interviews

Out of the 35 participants, 5 were classified under factor 4. Within this group, 3 individuals reported dissatisfaction, while 2 expressed satisfaction with their AI interview experiences.

In Factor 4, the items that garnered the highest levels of agreement were: "Questioned what the AI interview was evaluating (Z=1.85)" and "Continued skepticism about the results of the AI evaluation (Z=1.45)." In contrast, the statements that received the most negative responses in Factor 4 were "Distrust in the interview evaluation's reliability (Z=-2.06)" and "No understanding of the direction of the AI interview (Z=-1.63)" (Table 3). Based on these results, factor 4 harbors doubts about whether AI interviews can effectively evaluate nursing duties, yet they trust the direction and evaluation process

of AI interviews. They also make efforts to prepare for AI interviews. Thus, they have been designated as the "Critical Acceptance of AI Interviews" Factor.

Consistency among factors

The results indicate that nursing students' experiences with AI interviews can be divided into four distinct factors, each displaying clear characteristics specific to that factor.

However, across all four factors, nursing students shared a common sentiment about their AI interview experiences, notably "Felt disappointed for not being able to demonstrate all competencies during the AI interview (Z=1.06)." This reflects that nursing students are concerned about their performance outcomes and regret not having the opportunity to display their full range of skills during the AI interviews.

Discussion

With the advancement of AI technology, leading hospitals are integrating AI into their interview processes for efficiency and cost reduction. This is particularly useful for large-scale recruitments or handling numerous applicants. AI interviews can reduce biases from human interviewers by presenting the same questions in the same manner to all candidates and maintaining consistent evaluation criteria, thereby ensuring fairness. This trend towards increasing the use of AI interviews highlights the importance of subjective opinions and attitudes towards AI interviews. This study utilized the scientific approach of Q methodology, which focuses on autonomous subjectivity, to investigate how nursing graduates perceive AI interviews. As a result, the study identified four distinct Factors of perception among the participants.

Factor 1, labeled as 'Proactive Preparation for AI Interviews', is characterized by an attitude of effective preparation to confront AI-based interviews. Participants in this group are noted for their awareness that AI interviews differ from traditional ones, prompting them to prepare especially for aspects beyond just the content of their responses, such as facial expressions, tone of voice, and linguistic accuracy. Furthermore, participants acknowledged the need to utilize training programs to become accustomed to the

different evaluation methods and factors inherent in AI interviews compared to conventional ones. It was noted that the majority of statements to which Factor 1 respondents agreed or disagreed, positively or negatively, were related to the proactive preparation for AI interviews. This finding aligns with efforts observed in the study by Park, Park, Choi, and Park (10) regarding the establishment of an information system for AI interviews, indicating similarity with the results of this study. Universities should develop AI interview training programs to assist students in preparing for interviews by providing simulations closely resembling real AI interview environments and offering feedback to identify areas for improvement.

Factor 2, termed 'Negative Perception of AI Interviews', represents a distinct group characterized by skepticism or negativity towards AI interviews. Individuals in this category perceive AI interviews as deficient in human interaction due to their reliance on automated systems. They also express concerns about fairness being compromised if there are biases in the data or flaws in the algorithms, as artificial intelligence operates based on data. Furthermore, it was found that candidates perceive the interview process as unfair because AI interviews operate based on pre-set questions and analysis of responses. The majority of statements to which Factor 2 respondents agreed or disagreed, positively or negatively, were related to the negative perception of AI interviews. Such research findings align with studies by Park, Park, Choi, and Park (10). In order to address negative perceptions of AI interviews, it is important to provide candidates with advanced information to comprehend the principles and procedures involved, facilitating effective preparation. Additionally, prior practice will be crucial for candidates to effectively demonstrate their strengths during the AI interview process. Addressing negative perceptions of AI interviews requires a multifaceted approach that emphasizes transparency and data security. By providing accurate explanations of the decisions made based on AI interview results, conducting regular algorithm audits, offering detailed candidate feedback, and implementing strong data security measures, organizations can build trust in their AI

interview systems. These strategies not only mitigate concerns but also ensure a fair, secure, and transparent interview process, paving the way for broader acceptance and successful integration of AI technology in recruitment.

Factor 3, identified as 'Positive Perception of AI Interviews', represents a group with favorable opinions and attitudes towards AI interviews, recognizing their potential benefits and acknowledging fairness and efficiency in the interview process. Participants in this category perceive that AI technology reduces the biases of human interviewers, enabling more objective evaluations. They also view AI interviews positively for saving time and providing convenience by allowing participation without constraints of time and location. The majority of statements to which Factor 3 respondents agreed or disagreed, positively or negatively, were related to the positive perception of AI interviews (11). To prepare positively for AI interviews, it is crucial to adapt quickly to changing environments. Furthermore, accurately understanding information, background knowledge, and perception levels regarding artificial intelligence will allow candidates to leverage the benefits of AI interviews effectively and handle situations with flexibility. By cultivating a positive attitude towards AI interviews, it is possible to influence recruitment practices positively, thereby impacting overall hiring procedures favorably.

Factor 4, termed 'Critical Acceptance of AI Interviews', encompasses individuals who maintain a critical stance towards AI-based interviews yet demonstrate an attitude of acknowledging and embracing the benefits and potential of AI technology. These participants recognize the drawbacks and potential risks associated with AI interviews but hold optimism that advancements in AI technology will address these issues over time. Furthermore, it was noted that there is an acceptance of the implementation of AI interviews, along with a recognition of the importance of regulations, guidelines, and ethical standards to supplement or ensure the safety of AI interviews. The majority of statements to which Factor 4 respondents agreed or disagreed, positively or negatively, were related to the critical acceptance of AI interviews (11).

Recognizing the potential for creating a more equitable hiring process through AI interviews, it is understood that enhancing AI interview technology can lead to positive changes in society and businesses. Therefore, it is essential to acknowledge the need for appropriate regulations and improvement efforts to facilitate this transformation.

The common perspectives derived from the four Factors identified in this study manifest as a 'Positive Perception of AI Interviews' and a 'Negative Perception of AI Interviews'. As an alternative to the positive aspect, it is evident that enhancing the convenience and efficiency of AI interviews, improving objectivity and fairness, and providing immediate feedback to applicants is necessary. Similarly, as an alternative to the negative aspect, addressing biases and ethical concerns, strengthening personal data protection, establishing ethical guidelines for AI interviews, encouraging companies to adhere to them, and maximizing the positive aspects of AI interviews while minimizing the negative ones are essential (9,10). To foster a comprehensive discussion on enhancing AI interview systems and integrating diverse perspectives on their strengths and weaknesses, we will organize focus groups and workshops. Additionally, we will track the evolving perceptions of "critical acceptance" participants over time to understand how their views evolve with advancements in AI technology and changes in the interview process. By thoroughly exploring the "critical acceptance" Factor, researchers aim to address current limitations and gain valuable insights into improving the future of AI interviews to be more effective, fair, and user-friendly.

In future research, expanding the sample size by including more and diverse participants can enhance the generalizability and reliability of the results. It will also be necessary to include a larger number of nursing graduates who have undergone AI interviews from various regions and institutions. Conducting longitudinal studies to track changes in perceptions over time and across different stages of AI interview adoption can provide deeper insights into the evolving impact of AI technology in recruitment. This study can be deemed significant in providing insights by identifying the perception Factors of nursing

graduates regarding AI interview experiences in the domestic context, thereby elucidating their characteristics and offering information for AI interview strategies.

Conclusion

This study identified four Factors of perceptions regarding AI interviews, revealing both positive aspects such as efficiency, fairness, and convenience of AI interview technology, as well as negative aspects including concerns about personal data protection, biases, and the lack of human elements. The Proactive Preparation for AI Interviews Factor is characterized by a positive acceptance of AI interviews, actively preparing for them, and striving to achieve the best performance during the interview process through understanding and practicing AI interview technology. The Negative Perception of AI Interviews Factor is characterized by a skeptical and negative view of AI interviews. They perceive AI interviews as potentially biased or impersonal, expressing concerns about the lack of human interaction facilitated by the technology. The Positive Perception of AI Interviews Factor expects AI interviews to provide convenience and efficiency, positively recognizing the advantages of this technology. The Critical Acceptance of AI Interviews Factor, while acknowledging concerns about the fairness of AI interviews, adopts an attitude of accepting the potential of the technology. Therefore, it is necessary to identify issues with AI interviews, explore possibilities for improvement, and ensure a balanced consideration of both the strengths and weaknesses of AI interview technology. Based on the different factors of perceptions of AI interview experiences identified in this study, it is proposed to conduct further research. This research could focus on validating the effectiveness of customized AI interview programs tailored to each perception Factor. Additionally, exploring comparative studies and developing educational courses related to AI interviews are suggested for further investigation.

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