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Development and validation of Midwifery Vocational Perception Scale

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ABSTRACT

Background & aim: Vocation perception of midwives is important in terms of their sense and level of professionalism. The purpose of this study was to develop and validate Midwifery Vocational Perception Scale.

Methods: This validation study was carried out at five public hospitals located in Istanbul, Turkey from October 1st to December 30th, 2019. In the first stage, 68 items draft form was prepared. After receiving the opinion of seven experts, the face validity of the scale was tested with 20 midwives. In the second stage, the 5-point 52-item Likert scale was administered to 282 midwives. However, since the outliers were deleted before the factor analysis, the analysis was performed for only the data of 232 people. Factor and confirmatory analyses and the Cronbach's alpha coefficient were used to analyze the scale validity and reliability.

Results: According to the exploratory factor analysis, the scale consisted of 16 items and three factors that explained 53.085% of the the scale variance. Confirmatory factor analysis fit index results were found as CMIN=175,427, DF=97, p<0.001, CMIN/DF=1.809, RMSEA=0.059, CFI=0.933, GFI= 0.916. The Cronbach's alpha value of scale was determined to be 0.865. The lowest anyone scored was 16, the highest was 80, while the mean score was 87.71 ±7.46 (min: 67, max: 95).

Conclusion: A high score indicates positive vocational perception and occupational opinions in midwifery, while a low score indicates negative vocational perception and occupational opinions. The Midwifery vocational Perception Scale was prepared in Turkish and a validity study in other cultures is recommended.

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Introduction

Midwifery is a profession that develops in parallel with scientific and technological developments and includes science, art and ethical values. Midwifery is a health discipline with dependent, semi-dependent and independent roles (1,2). The vocation opinions and perceptions of midwives who have important roles in healthcare services towards their profession are important.

A job that requires specific training, based on knowledge and skills, with specific legal and ethical rules, is defined as an occupation (2,3). The individual's feelings, attitudes, behaviors, and world views regarding the profession are defined as professional perception. Vocation perception includes the concepts of "professional qualifications" and "professional status". The occupational perception of midwives is an expression of what the members of the midwifery profession and society think about midwifery (2). Opinionsand perceptions of midwives about their profession may affect their motivation and vocational performance (4,5). In order to improve the professionalism of midwives, first of all, their views and perceptions on the profession should be determined (1,6,7).

Studies about midwifery in the world generally focus on job satisfaction and professional attitudes of midwives rather than occupationsperception. The number of scale development studies that focus directly on "perceptions" and especially "vocational perceptions" is low. The scales that exist are

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insufficient in determining midwives' vocational perceptions. Furthermore, they are also insufficient while questioning the midwifery-specific subjects. Thus, there is a need for further research (8, 9). The Midwifery vocational perception scale is the first measurement tool specifically formed in order to determine midwives' perception of their profession. The scale items were chosen to reflect various dimensions of vocational perception. This research aimed to form a reliable measurement tool to determine Turkish midwives' vocational perception.

Materials and Methods

This validation study was conducted to develop and validate the midwifery vocational perception scale (MVPS). Ethical clearance was obtained from the Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital Clinical Research Ethics Committee (Decision no: 41 of EY.FR.22; Date: 07/03/2018). Scale development studies plan theoretically or experimentally. This study was planned and conducted using a theoretical and empirical study.

The stages of scale development included designing, pilot implementation, and real implementation. Implementation phase included (a) analyzing the items, (b) calculating the reliability and factorial validity and (c) construct validity (1, 6, 7).

The sample includes midwives selected by simple random sampling from those who worked in Turkey's largest city Istanbul hospitals and were working as permanent staff in the maternity hospital and that agreed to participate in the study.

A draft with 68 items was prepared after the literature review without determining sub-dimensions. In an expert panel with attendance of one statistictician and six midwifery researchers, the irrelevant items and the items that were determined to serve the same purpose were excluded. Thus the 5-point Likert type ((1) I do not agree at all, (2) I disagree, (3) I am in between, (4) I Agree, and (5) I strongly agree) 52-item scale was created. (10,11,12).

At the stage of developing the Midwifery Vocational Perception Scale, forms that were necessary were emailed to seven academics for feedback. The draft scale was created per these academics suggestions. Ethical approval from the Ethics Committee of one of the hospitals to be researched (for multicenter research) (Decision no. 41 of EY.FR.22 No: 07/03/2018) was obtained. Informed written and verbal consents of the participants were retrieved at the hospital. The researcher also informed the participating patients that they could ask anything and leave the research anytime they want.

According to the existing literature, the produced scale must be evaluated using an experimental technique using comparable sampling (10, 13). After confirming the validity of the language and content and making the required preparations in the data collecting instruments, 20 midwives were included in the pre-implementation phase, and the face validity was verified. Following the examination, a 52-item draft form was evaluated.

This research was carried out at five public hospitals located in Istanbul, Turkey from October 1st to December 30th, 2019. These hospitals were preferred because they were the centers where most midwives worked. Midwives who were currently working, signing the informed consent, agreeing to be a part of the research were included in the study. Midwives who participated in the study but completed the forms incompletely were excluded from the study. The data were collected with the descriptive information form and considering the ethical aspects. At the stage of developing the midwifery vocation perception scale, the scale's essential forms were e-mailed to seven specialists, who provided comments. A total of 304 midwives completed the printed form during the three-month data collecting period (October 1 to December 30, 2019). As a consequence of the exams, it was found that 282 of the 304 forms could be statistically analyzed. In general, the sample size should be 5–10 times the number of items in the sample. (12, 14). In this study, the sample size consisted of 282 working midwives. Since the number of instrument items was 52, the sample size met the sample size requirements (five times of item numbers). Subsequently, data were collected for the test-retest with the participation of 61 midwives working at these hospitals.

One of the most frequently used methods in reliability analysis is test-retest analysis. The test-retest analysis is performed to evaluate the test invariance against time. In the literature, it is recommended that test-retest should be performed with at least 30 people with an interval of 15 days or 1 month. In this study, the test-retest was performed 15 days after the end of the previous application. The lack of a significant difference in mean scores obtained after both applications shows that the results are consistent and dependable throughout time (11, 12, 14).

The data were analyzed using SPSS 21.0 (IBMVR Statistics 21 Chicago IL, USA) and AMOS (Analysis of Moment Structures) softwares. Cronbach's alpha reliability coefficient, item uniqueness, and item-total score correlations were used to assess reliability. To evaluate the concept validity, factor analyses were performed. The construct validity of the scale was determined and confirmed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The instrument was administered to 61 midwives in the research 15 days later to assess its stability over time, and the test-retest values (Pearson correlation coefficients) were calculated (15,16).

Results

The average age of the participants was 31.80±8.02 (min: 21-max: 58), and the average year of work was 9.86±8.47 (min: 1-max: 35) years. 30.2% of midwives included in the study were over the age of thirty-five years, 15.1% received postgraduate education, 44% were single, 9.9% unwillingly chose the profession, and 1.7% worked only in the night shift (Table 1).

In our investigation, items with item-total correlation values less than 0.32 were eliminated by beginning with the item with the smallest item-total correlation coefficient and calculating the item-total correlation value until no more low correlation values. As a result, 36 items with item-total correlation values less than 0.32 were eliminated from the scale. The scale item-total correlation coefficients ranged from 0.330 to 0.618. These correlation values can also be utilized to determine internal consistency (12,14, 17,18).

Table 1. Descriptive characteristics of the participants (n=232)

characteristics	Frequency (%)
Age (years)	
18-34	162 (69.8)
≥ 35	70 (30,2)
Educational level	
Vocational high school	15 (6.5)
Associate degree	48 (20.7)
Undergraduate	134 (57.8)
Postgraduate	35 (15.1)
Marital status	
Married	130 (56.0)
Single	102 (44.0)
Willingly choosing midwifery profession	
Reluctantly chose	23 (9.9)
Partially willingly chose	85 (36.6)
Willingly chose	124 (53.4)
Working style	
Shift	148 (63.8)
Night +weekend	26 (11.2)
Daytime work	54 (23.3)
Lonely night	4 (1.7)
Yaş	31.80±8.02 (min:21-max:58)
Duration of employment in the profession years	9.86±8.47 (min: 1-max: 35)

The content and construct validity of the midwifery career perception scale, which was designed based on literature, were assessed (10, 12, 14, 18).

Content validity: Kendall's W test was used to assess content validity, and agreement between expert judgments for the Midwifery Vocation Perception Scale was observed (Kendall's WaScale Form = 0.167, df = 67, p =.160). The Davis (1992) approach was used to assess insights, and the Content Validity Index (CVI) score was determined to be 0.82. (9).

Construct validity: Explanatory and confirmatory factor analyses were carried out in order to explain and confirm the Midwifery Occupational Perception Scale's structure.

Explanatory factor analysis: An EFA was performed to uncover the underlying structure of the 52-item Midwifery Vocation Perception Scale. The Kaiser–Mayer–Olkin (KMO) test and Bartlett's test of sphericity are used to determine whether or not the data set is acceptable for factor analysis (12, 14, 19, 20).

Table 2. Factor characteristics and scale items of the midwifery vocation perception scale (n=232)

Item no.	Scale Item	First	Second	Third	Item to total correlations
Factor 1: Role Perception					
27-1	Midwifery is one of the sacred professions.	.754			.473
38-2	In the profession of midwifery. communication with people is very important	.711			.618
39-3	In the profession of midwifery, personal characteristics (such as understanding, sacrifice, benevolence) are very important	.620			.598
51-4	Love for humanity is very important in the profession of midwifery	.611			.603
41-5	Midwives are professionals who provide healthcare services	.578			.602
25-6	The role of the profession of midwifery is very important in protection of human health	.519			.472
Factor 2: Professionalism Perception					
5-7	The profession of midwifery requires professionalism		.835		.525
6 -8	The profession of midwifery requires adherence to ethical values		.729		.463
4 -9	The profession of midwifery requires undergraduate-level education		.717		.360
10-10	The profession of midwifery requires selflessness.		.573		.523
14-11	In the profession of midwifery, the concept of empathy is very important		.562		.477
7-12	Midwifery is an art		.438*		.465
Factor 3: Duty-Responsibility Perception					
50-13	Midwives are important members of the healthcare team			.842*	.505
47-14	Self-esteem is very important in the profession of midwifery			.757	.618
43-15	The role of the profession of midwifery is very important in protection of mother and child health			.630	.581
48-16	The profession of midwifery is one of the professions that can be practiced with pleasure			.489	.366

* The load values of the items collected in 3 factors were 0.438 and 0.842

The KMO value in our investigation was determined to be 0.874. As a consequence, it was determined that the outcome of the factor analysis applied to the data would be relevant and useable. According to the results of Bartlett's sphericity test, there were significant and strong correlations among the variables, and these data were appropriate for factor analysis (X^2: 1251.906, sd: 120, p <.05).

Table 3. Factor summary of midwifery vocation perception scale (*n*=232).

	Construct validity					
Factor name	**Number of items**	**Item analysis item-total correlation range**	**Eigenvalue**	**%explained variance**	**Loading range**	**Internal reliability Cronbach's α**
Role perception	6	0.47-0.61	5.59	19.25	0.51-0.75	0.807
Professionalism perception	6	0.36-0.52	1.80	18.11	0.43-0.83	0.768
Duty-responsibility perception	4	0.36-0.61	1.09	15.70	0.48-0.84	0.727

Principal components analysis and Varimax rotation techniques were used to investigate the factorial structure of the Midwifery Vocation Perception Scale. After the items with an item load value of less than 0.32 or the overlapping (thirty-six) items were excluded and a total of 16 items remained on the scale. According to the exploratory factor analysis on the scale, 3

factors with eigenvalues greater than one explained 53.085 percent of the total variation. The scree plot illustrates the dimensional distribution of the scale (Figure 1). As shown in Table 3, the factor load values ranged from 0.438 to 0.842.

Table 4. Midwifery vocation perception scale:Cronbach's alpha and split-half test reliability results (n=232and n=61)

Subscales	Items	Scale Form			Test Retest	
		Cronbach's Alpha Coefficient	Split-Half Test Reliability			
			Spearman-Brown Coefficient	Guttman Split-Half Coefficient	r*	p
Factor 1	6	0.80	0.80	0.80	0.47	0.00
Factor 2	6	0.76	0.70	0.70	0.26	0.00
Factor 3	4	0.72	0.75	0.75	0.84	0.00
Total Scale	16	0.86	0.85	0.85	0.62	0.00
Intraclass Correlation Coefficient	2	0.74	Average Measures:0.73			0.00

*r: Pearson correlation coefficient, p< 0.05

Confirmatory factor analysis: Following the exploratory factor analysis, the sixteen-item scale was subjected to confirmatory factor analysis. The fit criteria values of the model examined by confirmatory factor analysis (CMIN=175,427, DF=97, p<0.001, CMIN/DF=1.809, RMSEA=0.059, CFI=0.933, GFI= 0.916) were compatible with the literature (21, 22).

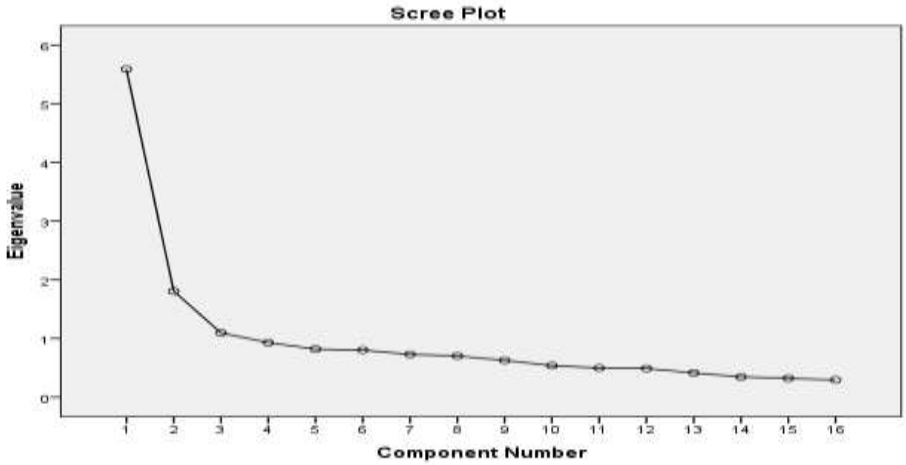

Figure 1. Scree plot

As a result, it was seen that the model fit was perfect. Figure 2-3 presents the path diagram for the confirmatory factor analysis. The path coefficients of all items in all three factors were determined to be significant following the confirmatory factor analysis. During the examination of the standardized path coefficients, the most effective item for factor 1 was item 2 (β_0=0.742); the most effective item for factor 2 was item 7 (β_0=0.799); the most effective item for factor 3 is 15. item (β_0=0,742).

The degree to which a scale measures what it is supposed to measure is referred to as its reliability. Reliability stresses consistency as a symbol of stability and, hence, validity. The scale validity criterion and clearing the reliability test (23, 24,25).

Internal reliability: The Cronbach's alpha coefficient of 0.865 was used to calculate the internal reliability of the complete Midwifery

Vocation Perception Scale with 16 items. A high degree of dependability exhibited by this coefficient indicates that the group is homogeneous, the scale items are consistent with one another, and the scale is legitimate (26).

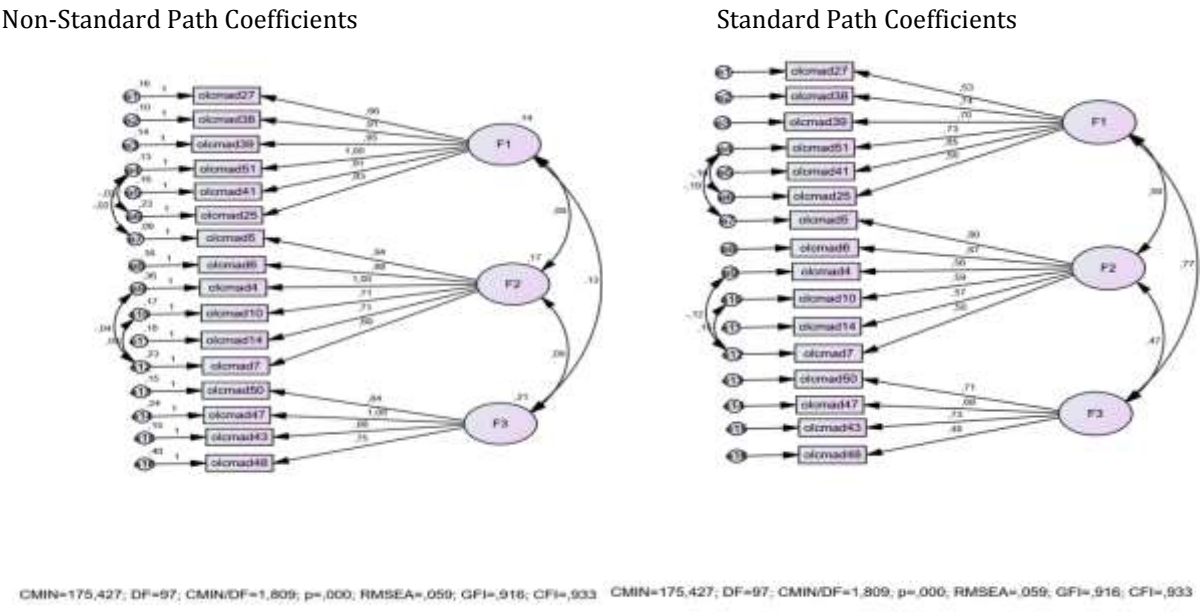

Figure 2-3. Confirmatory factor analysis path diagram

Scoring of the Midwifery Vocation Perception Scale: This is a 16-item, three factorial, 5-point Likert scale (6 items under the 1st dimension, 6 under the 2nd, and 4 under the 3rd (Fig.1). The scale's 3 factors were determined to be "role perception", "professionalism perception", and "duty-responsibility perception". The scale's minimum scores are 6, 6, 4 and the maximum scores are 30, 30, and 20 points, respectively, for the first, second, and third factors. There are no items on the scale that are scored in reverse. The lowest possible total score is 16, and the greatest possible total score is 80. The mean total score on the scale was 87.71 ±7.46 (min: 67, max: 95). The average of the first factor of the scale was 41.38 ±4.80 (min: 23, max: 45), the average of the second factor was 27.95 ±2.29 (min: 21, max: 30), the average of the third factor was 18.37 ±1.87 (min: 9, max: 20). High scores reflect positive views on the midwifery profession, while low scores reflect negative views on the midwifery profession.

Time-invariance: (test-retest method/ consistency/stability coefficient): The same group was administered the test twice, on different dates. The correlation coefficient between the two applications was calculated. This calculated number was considered to be the reliability coefficient. The invariance of the Midwives' Occupational Perceptions Scale (the average score of the previous 282 midwives and the test-retest mean score of 61 midwives) versus time was analyzed with the intraclass correlation coefficient. The intra-class correlation coefficient (ICC=0.73) gave the same or similar results in two measurements, and the reliability of the test was found to be middle level (27) (Table 4). Furthermore, the correlation between the first implementation of the draft scale form and its second application was examined using Pearson's and Spearman's correlation coefficients (r) (26). In the present study, a middle level of positive correlation was found between the first and subsequent applications (r =.62, p <.05) (Table 4).

Discussion

The Midwifery Vocational Perception Scale was the first assessment instrument developed particularly to assess midwives' vocational perception. The scale development began with a thorough assessment of the literature (1,6). Using literature, a draft form with 68 items was prepared, which deals with the midwifery profession from various perspectives. As an outcome of the assessment done by one academic in the area of statistics and six academics in the field of midwifery, items that were deemed to serve no use or had the same interpretations were deleted. Finally, a 52-item testing version of the scale was developed. The scale items were designed to address midwives'

opinions from a variety of perspectives. To evaluate the construct validity of the scale, an exploratory factor analysis was done. The research revealed that the scale included 16 items and three variables and explained 53.085 percent of the total variance.

There are three ways to include an item in a factor. If the item's factor load is less than "0.32," or if the difference between the factor load of the item in the factor and the factor load of the other factors is less than "0.10," or if the item does not fall under a factor and remains single, that item is removed from the scale (28, 29, 30). Items that did not correspond to a single factor in each iteration, those that overlapped, and those with factor loads less than 0.32 were therefore eliminated from the scale. One of the most crucial aspects to consider while deleting things is deleting them one at a time (14, 22, 25). The study resulted in the removal of 36 items from the scale, resulting in a 16-item three-factor structure. Table 2 shows the factors that emerged as a consequence of this research, as well as the conclusions for these factors.

DeVellis (2016) recommends that the rate of total variation explained in scale development studies be at least 0.40. (14). In this example, the resulting 53,085 percent value was judged to match the overall variance given.

Factor 1: It includes the items numbered 1, 2, 3, 4, 5, and 6. They include occupational roles. Thus, the factor was named RolePerception.

Factor 2: It includes the items numbered 7, 8, 9, 10, 11, and 12. They contain professionalism perception. Thence, the factor was named Professionalism Perception.

Factor 3: It includes the items numbered 13, 14, 15, and 16. They include occupational responsibilities. Thus, the factor was named Duty-Responsibility Perception.

The Cronbach's alpha reliability score of our scale was determined to be extremely satisfactory when seen as a feature that should be present in a scale (0.865). Furthermore, the evaluations for validity and reliability indicated that the scale is relevant. A Cronbach's alpha reliability coefficient less than "0.40" indicates that the scale "is not reliable," a range of "0.40–0.59" indicates "poor reliability," a range of "0.60–0.79" indicates "moderate reliability," and a range of "0.80–1.00" indicates "high reliability" (29, 30). The scale's Cronbach's alpha (a) value was determined to be 0.865. It is preferable if this number is at least 0.70. (23, 31). The scale was confirmed to be statistically trustworthy since 0.865 >0.70.

Table 3 shows the Cronbach's alpha reliability coefficients for the scale's subdimensions. In Turkey, the midwifery profession is usually preferred because of job opportunities. It was chosen to create this scale based on the premise that this scenario has a detrimental impact on occupational perception and occupational views. The overall scale score is calculated by combining the scores from the three elements. Scoring high means a positive occupation perception and occupational opinions and vice versa. In the study, the meanstotal score of scale was 87.71 ±7.46 (min: 67, max: 95) was detected. This high average score indicates that the participants have positive opinions about the profession. Work performance and achievement are directly affected by occupation perception and occupational opinions (29, 32, 33). People's professional lives are influenced by their vocational perceptions and occupational attitudes. Because individuals spend a large portion of their waking hours working in their occupations (2, 3).

For the test-retest method, the correlation between the first implementation of the draft scale form and its second application was examined analyzed with the intraclass correlation coefficient. The intraclass correlation coefficient (ICC) takes a value between 0 and 1 (26). The intra-class correlation coefficient are interpreted: 0.00–0.69 to not acceptable correlation, 0.70–0.84 to medium correlation, 0.85–0.94 to higher correlation, and 0.95-1.00 = perfect correlation (27) (Table 4).

Individuals with favorable vocation perspectives are more likely to promote their career, participate in occupation-related procedures, and put out effort in the interest of their profession. A midwife, who does not perceive his profession positively, cannot achieve professional satisfaction and occupational progress. It is believed that there is a link between good occupation views and professional success. In a study examining the professional perceptions of nurses and

midwives, It has been stated that the professional perceptions of nurses and midwives are not positive, and the future expectations there are partially positive (2).

Midwives' opinions about their profession affect their work motivation, performance, and career (2, 34). The professional perspectives of midwives were not covered in this study because the goal was to construct a scale. Researchers that utilize this measure in future studies will be able to explore all aspects that may influence midwives' occupational views. This scale, designed to assess Midwifery Vocation Perception, is a tool that may be tailored to different cultures. A universal scale is required to evaluate midwives' views of vocation in countries with diverse midwifery models and to identify variations between them. It is expected that an important contribution to the midwifery literature will be made with the application of the Midwifery Vocation Perception Scale in different countries. This scale will be a tool to be informed about the vocation perceptions of the midwives in that country and to investigate the problems in the country's midwifery services. As a result, the Midwifery Vocation Perception Scale may be used to address two issues that have piqued the interest of researchers: (a) What are the views of midwives at the relevant institution or country on their profession? (b) What is the nature of the link between midwives' vocation perspective and other factors? In addition, based on this scale, other researchers, nurses, and other health professionals can work on the development of similar scales. The creation of the "Midwifery Vocation Perception Scale" will aid in the understanding of the issues faced by midwives. The positive aspect of a scale is that all expressions in the scale are scored positively. It is a limitation for this study that midwives participate less in the study due to their intensive work. Furthermore, the study's findings are confined to the qualities examined by the "Occupational Opinions of Midwives." However, because the Midwifery Vocation Perception Scale was developed in Turkish, more research should be conducted to evaluate the validity–reliability of the other cultures.

Conclusion

Determining midwives' occupation-related perception raises their awareness of their job. The Midwifery Vocational Perception Scale, which has been shown to be a valid and reliable instrument through analysis, is the first assessment tool designed to disclose midwives' thoughts and experiences about their profession. Furthermore, this scale serves as a reference point for many research involving midwives. Using this instrument, it will be possible to determine the opinions and perceptions of midwives towards their profession. We recommend further research to increase awareness regarding midwife's “role perception", "professionalism perception", and " duty- responsibility perception".

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Conflicts of interest

Authors declared no conflicts of interest.

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