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## ORIGINAL ARTICLE

## The Evaluation of Iranian Midwifery Ph.D. course based on the CIPP Model

## تقييم دكتوراه القبالة الإيرانية. دورة تدريبية تعتمد على نموذج CIPP

Robab Hasanzadeh<sup>1</sup>, Solmaz GhanbariHomaie<sup>2</sup>, Sakineh Mohammad

Alizadehchahrandabi<sup>2</sup>, Mina Irvani<sup>3</sup>, Saiedeh Sadat Hajimirzaie<sup>4</sup>, Shahla Khosravi<sup>5</sup>, Parvin Abedi<sup>6</sup>, Mojgan Mirghafourvand<sup>7,\*</sup>

<sup>1</sup>Department of Midwifery, Bonab Branch, Islamic Azad University, Bonab, Iran

<sup>2</sup>Department of Midwifery, School of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran

<sup>3</sup>Department of Midwifery, School of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

<sup>4</sup>Department of Midwifery, School of Nursing and Midwifery, Shahroud University of Medical Sciences, Shahroud, Iran

<sup>5</sup>Department of Community Medicine, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

<sup>6</sup>Menopause Andropause Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

<sup>7</sup>Social Determinants of Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

\*Tabriz University of Medical Sciences, South Shariati St. Tabriz, 5138947-977 Iran

Tel: +984134796770  
Email: mirghafourvand@gmail.com

**Background:** A high-quality Ph.D. course requires frequent assessment and identification of deficiencies and limitations. The midwifery Ph.D. course started in 2016 in Iran and since no evaluation has been performed on this program, the present study aimed to evaluate the Iranian midwifery Ph.D. course based on the CIPP model.

**Method:** This descriptive-evaluative research was conducted based on the CIPP model in 2021 in the schools of nursing and midwifery of Tabriz and Ahvaz Universities of medical sciences, Iran. The statistical population included the faculty members of the midwifery Ph.D. program (9 individuals) and midwifery Ph.D. graduates and students (21 individuals). The data collection tools comprised CIPP-based questionnaires exclusively for faculty members and students. Descriptive statistics were employed for data analysis.

**Results:** Most students (81%) and faculty members (77.8%) reported an appropriate general evaluation of the midwifery Ph.D. curriculum. Most faculty members (77.8%) and students (90.8%) reported the indicators of the midwifery Ph.D. curriculum as appropriate in terms of context. More than three forth of faculty members (77.8%) and more than half of the students (57.1%) reported this curriculum as appropriate regarding input. This program was also reported to be appropriate according to 52.4% of students and 66.7% of faculty members in terms of process. Furthermore, a total of 66.7% of participants in both groups reported an appropriate status in terms of output.

**Conclusion:** Midwifery Ph.D. curriculum was reported as an appropriate program. Also, students of this discipline requested greater stress on clinical upskilling for midwifery Ph.D.

**Keywords:** Course Evaluation, CIPP Model, Midwifery, Iran

**الخلفية:** دكتوراه عالية الجودة. تتطلب الدورة تقييمًا متكررًا وتحديد أوجه القصور والقيود. دكتوراه القبالة. بدأت الدورة في عام ٢٠١٦ في إيران، وبما أنه لم يتم إجراء أي تقييم لهذا البرنامج، فإن الدراسة الحالية تهدف إلى تقييم دكتوراه القبالة الإيرانية. الدورة على أساس نموذج CIPP.

**الطرق:** تم إجراء هذا البحث الوصفي التقييمي بناءً على نموذج CIPP في عام ٢٠٢١ في مدارس التمريض والقبالة في جامعتي تبريز والأهواز للعلوم الطبية، إيران. وشمل المجتمع الإحصائي أعضاء هيئة التدريس بدرجة الدكتوراه في القبالة برنامج (٩ أفراد) ودكتوراه القبالة. الخريجين والطلاب (٢١ فرداً). تتألف أدوات جمع البيانات من استبيانات تعتمد على CIPP حصرياً لأعضاء هيئة التدريس والطلاب. واستخدمت الإحصائيات الوصفية لتحليل البيانات.

**النتائج:** أبلغ معظم الطلاب (٨١٪) وأعضاء هيئة التدريس (٧٧,٨٪) عن تقييم عام مناسب لدكتوراه القبالة. مقرر. أفاد معظم أعضاء هيئة التدريس (٧٧,٨٪) والطلبة (٩٠,٨٪) عن مؤشرات دكتوراه القبالة. المنهج حسب الاقتضاء من حيث السياق. أفاد أكثر من ثلاثة أرباع أعضاء هيئة التدريس (٧٧,٨٪) وأكثر من نصف الطلاب (٥٧,١٪) أن هذا المنهج مناسب فيما يتعلق بالمدخلات. كما تم الإبلاغ عن أن هذا البرنامج مناسب وفقاً لـ ٥٢,٤٪ من الطلاب و ٦٦,٧٪ من أعضاء هيئة التدريس من حيث العملية. علاوة على ذلك، أبلغ ما مجموعه ٦٦,٧٪ من المشاركين في كلا المجموعتين عن وضع مناسب من حيث المخرجات.

**الخلاصة:** دكتوراه القبالة. تم الإبلاغ عن المنهج كبرنامج مناسب. كما طلب طلاب هذا التخصص مزيداً من التركيز على تحسين المهارات السريرية للحصول على درجة الدكتوراه في القبالة.

**الكلمات المفتاحية:** تقييم الدورة، نموذج CIPP، القبالة، إيران

## ارزیابی دوره دکتری رشته مامایی بر اساس مدل سیپ

## ایرانی مڈوائفری پی ایچ ڈی کی تشخیص CIPP ماڈل پر مبنی کورس

**زمینه و هدف:** دوره دکتری با کیفیت نیازمند ارزیابی‌های مکرر و شناسایی کمبودها و محدودیت‌های می‌باشد. از آنجایی که دوره دکتری مامایی از سال ۱۳۹۵ در ایران آغاز شده و هیچ ارزیابی برای این دوره انجام نشده است، مطالعه حاضر با هدف ارزیابی دوره دکتری مامایی ایران بر اساس الگوی سیپ انجام گردید.

**روش:** پژوهش حاضر از نوع توصیفی و ارزشیابی آموزشی بر مبنای الگوی سیپ می‌باشد که در سال ۱۴۰۰ در دانشکده‌های پرستاری و مامایی تبریز و اهواز انجام شد. جامعه پژوهش اعضای هیأت علمی دوره دکتری مامایی (۹ نفر) و دانش‌آموختگان و دانشجویان دکتری تخصصی مامایی (۲۱ نفر) بودند. ابزار گردآوری داده‌ها، پرسشنامه مخصوص اعضای هیأت علمی و دانشجویان تهیه شده بر اساس الگوی سیپ بود. در تجزیه و تحلیل داده‌ها، از آمار توصیفی استفاده شد.

**یافته‌ها:** اکثریت دانشجویان (۸۱٪) و اعضای هیأت علمی (۷۷/۸٪) ارزیابی کلی برنامه دکتری مامایی را مطلوب گزارش کردند. اکثریت اعضای هیأت علمی (۷۷/۸٪) و دانشجویان (۹۰/۸٪) شاخص‌های برنامه آموزشی دکتری مامایی در حیطه زمینه را مطلوب گزارش کردند، بیش از سه چهارم اعضای هیأت علمی (۷۷/۸٪) و بیشتر از نیمی از دانشجویان (۵۷/۱٪) برنامه آموزشی دکتری مامایی در حیطه درون‌داد را مطلوب گزارش کردند، این برنامه در حیطه فرایند توسط ۵۲/۴٪ از دانشجویان و ۶۶/۷٪ از اعضای هیأت علمی مطلوب گزارش شد. ۶۶/۷٪ از شرکت‌کنندگان در هر دو گروه در حیطه برون‌داد، وضعیت را مطلوب گزارش کردند.

**نتیجه گیری:** کوریکولوم دکتری مامایی به عنوان برنامه مناسب گزارش شد. دانشجویان این رشته خواستار تاکید بیشتر بر ارتقای مهارت بالینی دکتری مامایی شدند.

**واژه های کلیدی:** ارزیابی دوره، الگوی سیپ، مامایی، ایران

**پس منظر:** ایک اعلیٰ معیار کی پی ایچ ڈی کورس کے لیے بار بار تشخیص اور کمیوں اور حدود کی نشاندہی کی ضرورت ہوتی ہے۔ مڈوائفری پی ایچ ڈی۔ یہ کورس ایران میں ۲۰۱۶ میں شروع ہوا تھا اور چونکہ اس پروگرام پر کوئی تشخیص نہیں کی گئی ہے۔ اس لیے موجودہ مطالعہ کا مقصد ایرانی مڈوائفری پی ایچ ڈی کا جائزہ لینا ہے۔ CIPP ماڈل پر مبنی کورس۔

**طریقے:** یہ وضاحتی-تجزیاتی تحقیق ۲۰۲۱ میں CIPP ماڈل کی بنیاد پر تبریز اور ابواز یونیورسٹی آف میڈیکل سائنسز، ایران کے سکول آف نرسنگ اینڈ مڈوائفری میں کی گئی۔ شماریاتی آبادی میں مڈوائفری پی ایچ ڈی کے فیکلٹی ممبران شامل تھے۔ پروگرام (۹ افراد) اور مڈوائفری پی ایچ ڈی۔ گریجویٹس اور طلباء (۲۱ افراد)۔ ڈیٹا اکٹھا کرنے کے ٹولز میں CIPP پر مبنی سوالنامے خصوصی طور پر فیکلٹی ممبران اور طلباء کے لیے تھے۔ اعداد و شمار کے تجزیہ کے لیے وضاحتی اعدادوشمار کا استعمال کیا گیا تھا۔

**نتائج:** زیادہ تر طلباء (۸۱٪) اور فیکلٹی ممبران (۷۷,۸٪) نے مڈوائفری پی ایچ ڈی کی ایک مناسب عمومی تشخیص کی اطلاع دی۔ نصاب زیادہ تر فیکلٹی ممبران (۷۷,۸٪) اور طلباء (۹۰,۸٪) نے مڈوائفری پی ایچ ڈی کے اشارے کی اطلاع دی۔ سیاق و سباق کے لحاظ سے مناسب نصاب۔ تین چوتھائی فیکلٹی ممبران (۷۷,۸٪) اور آدھے سے زیادہ طلباء (۵۲,۴٪) نے اس نصاب کو ان پٹ کے حوالے سے مناسب بتایا۔ اس پروگرام کو ۵۲,۴٪ طلباء اور ۶۶,۷٪ فیکلٹی ممبران کے عمل کے لحاظ سے بھی مناسب بتایا گیا۔ مزید برآں، دونوں گروہوں نے کل ۶۶,۷٪ شرکاء نے پیداوار کے لحاظ سے مناسب حیثیت کی اطلاع دی۔

**نتیجہ:** مڈوائفری پی ایچ ڈی۔ نصاب کو ایک مناسب پروگرام کے طور پر رپورٹ کیا گیا تھا۔ نیز، اس ڈسپلن کے طلباء نے مڈوائفری پی ایچ ڈی کے لیے کلینیکل اپ سکلنگ پر زیادہ زور دینے کی درخواست کی۔

**مطلوبہ الفاظ:** کورس کی تشخیص، CIPP ماڈل، مڈوائفری، ایران

## INTRODUCTION

Midwives' role is crucial in raising reproductive, maternal, and newborn health. Suitable curricula are required to equip midwives with the necessary competence to provide high-quality and secure care. Therefore, midwifery instructors are responsible for ensuring that the midwifery curriculum is aligned with the objectives of field and seeking to enhance the quality of education (1,2).

Constant curriculum evaluation is also necessary to achieve educational objectives and enhance the quality of education (3). Curricula play a decisive role in obtaining higher education's goals and missions. Curricula are undergoing significant global changes to address sustainable developments and immediate long-term challenges (4). While the midwifery curriculum may be different in various countries, they all need to meet the needs of midwifery in theoretical and clinical education (2,5). An appropriate curriculum is essential in developing social, intellectual, and lifelong learning skills and acquiring the pertinent knowledge of learners' professions (6). A curriculum must meet society's needs and remain consistent with scientific-technical developments (7, 8).

CIPP is an evaluation model for curriculum evaluation developed by Stufflebeam in 1983 which includes four elements: Context, Input, Process and Product. Context includes the goals, objectives, and history. Inputs include material, time, physical and human resources needed for effective working. Process refers to all the teaching and learning processes, and product focuses on the quality of teaching, learning, and its usefulness (9).

As an academic discipline, midwifery started at medical sciences universities in Tabriz and Ahvaz, Iran, with the formal admission of Ph.D. students in 2016. This discipline was established to provide midwifery services in cases of natural births, diagnose, refer, and follow up of abnormal cases of births and pregnancies in society. Furthermore, graduate students in this field must maintain and enhance maternal, newborn, and child health standards in normal cases. In addition, they must participate in training students of different levels and offer consultation services on midwifery, so that they can help society with their knowledge and expertise.

The Iranian midwifery Ph.D. curriculum consists of 50 credits, 16 of which are allocated to the Ph.D. thesis, a total of 19 credits are specialized courses (theory, practice, and internship) held before the comprehensive examination, and 15 credits are clinical internship courses passed after the comprehensive exams during four semesters and in the maternity ward, emergency and midwifery clinic, operation room, postpartum ward, nursery, and healthcare centers.

Using a suitable curriculum, midwives can acquire the necessary life-saving skills and the expertise to detect and manage the complications of pregnancy and childbirth (2). No study has been conducted on evaluating Midwifery Ph.D. course in Iran, but Nursing Ph.D. and Reproductive Health Ph. D. courses have been studied. The results of Sahebshahbag et al.'s study showed that non responsiveness of nursing Ph.D. curriculum to the needs of community, healthcare

systems, nursing profession, and students' moving away from the clinical environment and its failure to improve the clinical competencies of nursing Ph.D. graduates were considered as the serious challenges of the nursing Ph.D. curriculum (10). In Abdi Shahshahani et al.'s study, the majority of Ph.D. students of reproductive health emphasized on the absence of clinical courses in curriculum and ignoring to empower the reproductive health experts in clinical skills (11).

As midwifery graduates play a significant role in enhancing maternal and newborn health, and due to the importance of teaching midwifery standards to achieve this goal, it is necessary to help these graduates by providing them with proper educational planning. Therefore, the present research aims to evaluate the midwifery Ph.D. course in Iran.

## METHODS

### *Study design, participants, and setting*

This descriptive-evaluative study was designed based on the CIPP model. The data was collected cross-sectionally from October to March 2021. The research environment included the schools of nursing and midwifery in the medical sciences universities of Tabriz and Ahvaz with midwifery Ph.D. programs. The statistical population consisted of midwifery Ph.D. students of the 2016 to 2020 classes and faculty members.

The inclusion criteria were passing at least the first semester of Ph.D. course or graduation from the course, and teaching in Midwifery Ph.D. course for faculty members.

### *Sampling*

The entire statistical population was introduced to the study using the census in case of their willingness to participate. The sample size was 30 (9 faculty members planning or teaching midwifery Ph.D. courses and 21 students). The self-report questionnaires were distributed through email or in-person to students, graduates, and faculty members. Informed written consent was also obtained through email or in-person.

### *Data collection tools*

The data was collected using a questionnaire by Abdi Shahshahani et al. (11) based on the CIPP model and curriculum evaluation tools. The content validity of the questionnaires was determined by surveying nine nursing and midwifery faculty members and ten midwifery Ph.D. students. Also, they were requested to provide full written recommendations and corrective viewpoints. A total of 17 questions were excluded from the questionnaire for faculty members due to a CVR of  $< 0.78$ , and 11 questions were also removed from the questionnaire for students due to a CVR of  $< 0.62$ .

The first section of the questionnaire for students consisted of demographic questions, including age, marital status, admission and graduation year, grade point average (GPA), the field of study for the master's degree, employment status, and the number of published papers and books. In the questionnaire for faculty members, the demographic questions included age, sex, field of study, and academic rank. The second part of the questionnaire consisted of 49 questions in five areas, i.e., context (9 questions), input (11 questions), process (14 questions), output (11 questions),

and general evaluation (4 questions) for faculty members, as well as 64 questions for students in five areas, context (7 questions), input (13 questions), process (25 questions), output (14 questions), and general evaluation (5 questions). The items related to context included the necessity of a Ph.D. course and the need for Ph.D. graduates specializing in midwifery research, training, and clinical activities. The input items included course units, instructors' expertise, and educational facilities. The items related to the process included teaching methods and aligning the universities' proposed priorities with the research requirements in midwifery and clinical skills training. The output items included ensuring alignment between the curriculum and the latest scientific advancements in society, enhancing scientific proficiency and specialized clinical expertise. The general evaluation included the need to revise the Ph.D. curriculum. The responses were in a multiple-choice format and were categorized into five levels utilizing a Likert scale: very low, low, medium, high, and very high. In order to enable statistical comparison, a point value ranging from 1 to 5 was assigned to each level. In order to assess the status of each category and make comparisons between students and professors, the scores achieved in each field were multiplied by 100 and then divided by the product of the number of items and the highest score obtained in each category (score 5). Scores between 0-33 were considered inappropriate, 34-66 fairly appropriate, and 67-100 were considered appropriate.

#### Statistical analysis

Data were analyzed using SPSS version 16. Descriptive statistics (mean, standard deviation, frequency distribution, and percentage) were used to determine the frequency distribution of the status of the evaluation indicators from the point of view of the participants, and an independent t-test was used to compare the mean scores of indicators between the groups.

## RESULTS

The mean  $\pm$  SD age of faculty members was  $49.77 \pm 6.86$ . Regarding academic rank, the faculty members included four full professors and five associate professors. The mean  $\pm$  SD age of students was  $41 \pm 9.27$  (Table 1).

| Table1. Characteristics of the study participants |                      |               |
|---------------------------------------------------|----------------------|---------------|
| Characteristics                                   |                      | N (%)         |
| Age                                               |                      | 41.23( 9.27)* |
| Marital Status                                    | Married              | 19 (90.5)     |
|                                                   | Single               | 2 (9.5)       |
| Housing                                           | Private house        | 6 (28.6)      |
|                                                   | Dormitory            | 13 (61.9)     |
|                                                   | Student Rental house | 2 (9.5)       |
| Quota                                             | Free quota           | 20 (95.2)     |
|                                                   | Excess quota         | 1(4.8)        |

\* Mean (Standard Deviation)

According to the survey results, the item "computer facilities, internet access, access to databases and library facilities" was rated the highest by the students, with an average score of  $4.04 \pm 1.04$ . The minimum score for the item "the credits provided in this course align with your expectations, educational requirements, and professional capabilities" was  $2.42 \pm 1.02$ . The item "the professors of the course use latest scientific resources" received the highest score of  $4.23 \pm 1.04$ . However, it should be noted that the two items with the lowest score ( $2.57 \pm 1.24$ ) were "The program for communication between students and graduates of your university and other universities across the country" and "The level of interaction between the midwifery and other educational groups of the faculty/university" as perceived by the participants.

The results indicated that the item "The Ph.D. curriculum in midwifery is designed to address the societal needs" received the lowest average score ( $2.90 \pm 0.99$ ), while "Enrolling in a midwifery Ph.D. program enhances the providing of midwifery services to the community" received the highest average score ( $4.14 \pm 1.01$ ).

According to the feedback provided by the faculty members, the input item with the highest average score ( $4.66 \pm 0.70$ ) pertained to the appropriateness of the supervisors' expertise in midwifery and reproductive health. On the other hand, the item with the lowest score ( $3.11 \pm 1.16$ ) was related to the curriculum's alignment with the course objectives. The item about faculty members' process of dedicating time to counseling and resolving curricular issues for midwifery Ph.D. students received the highest average score of  $4.66 \pm 0.70$ . Also, "The ability of students and graduates of this course at your university to communicate with other universities across the country" received the lowest average score of  $2.22 \pm 1.30$ .

The item "The department/faculty has a plan to utilize the research findings for advancing and promoting midwifery" received the lowest average score of  $3.0 \pm 1.0$ . In contrast, "Theses produced in this course have significantly contributed to enhancing professional skills, curricula, and care programs" received the highest average score of  $4.33 \pm 1.11$ .

Most faculty members (77.8%) and students (90.8%) reported the indicators of the midwifery Ph.D. curriculum as appropriate in terms of context. Most faculty members (77.8%) and more than half of the students (57.1%) reported this curriculum as appropriate regarding input. This program was also reported as appropriate according to 52.4% of students and 66.7% of faculty members in terms of process. Furthermore, a total of 66.7% of participants in both groups reported an appropriate status in terms of output (Table 2). Table 3 displays the mean and standard deviation of the indicators for the midwifery Ph.D. curriculum evaluation from the participants' perspectives in four areas: context, input, process, and result. The results obtained from the independent t-test indicated no statistically significant difference in the mean score of evaluated indicators of the four areas between the groups of faculty members and students.

Most students (81%) and faculty members (77.8%) reported

**Table 2. Frequency distribution of midwifery Ph.D. evaluation indicators in 4 domains from the participants' viewpoint**

|                            | Context         |      |          |      | Input           |      |          |      | Process         |      |          |      | Output          |      |          |      |
|----------------------------|-----------------|------|----------|------|-----------------|------|----------|------|-----------------|------|----------|------|-----------------|------|----------|------|
|                            | Faculty members |      | Students |      | Faculty members |      | Students |      | Faculty members |      | Students |      | Faculty members |      | Students |      |
|                            | N               | %    | N        | %    | N               | %    | N        | %    | N               | %    | N        | %    | N               | %    | N        | %    |
| Inappropriate (0–33)       | 0               | 0    | 0        | 0    | 0               | 0    | 0        | 0    | 0               | 0    | 0        | 0    | 0               | 0    | 0        | 0    |
| Fairly appropriate (34–66) | 2               | 22.2 | 2        | 9.5  | 2               | 22.2 | 8        | 38.1 | 3               | 33.3 | 11       | 52.4 | 3               | 33.3 | 7        | 33.3 |
| Appropriate (67–100)       | 7               | 77.8 | 19       | 90.5 | 7               | 77.8 | 12       | 57.1 | 6               | 66.7 | 10       | 47.6 | 6               | 66.7 | 14       | 66.7 |

**Table 3. Mean scores of total evaluation indicators of midwifery Ph.D. program in 4 domains from the participants' viewpoint\***

| Subjects           | Faculty members | Students      | F**   | P-Value |
|--------------------|-----------------|---------------|-------|---------|
|                    | Mean (SD) ***   | Mean (SD)     |       |         |
| Context            | 83.61 (14.84)   | 81.22 (15.13) | 0.070 | 0.794   |
| Input              | 73.93 (14.54)   | 67.25 (12.48) | 0.210 | 0.650   |
| Process            | 74.12 (15.29)   | 70.51(16.37)  | 0.039 | 0.844   |
| Output             | 74.34 (17.42)   | 70.88 (14.83) | 0.093 | 0.762   |
| General assessment | 83.61 (14.84)   | 81.22 (15.13) | 0.07  | 0.79    |

\* Independent t-test was used to compare the mean scores of indicators.  
 \*\* Levene's test statistic  
 \*\*\*Mean (Standard Deviation)

an appropriate general evaluation of the midwifery Ph.D. curriculum. No statistically significant difference was observed in the general evaluation of the midwifery Ph.D. curriculum between the opinions of both participating groups.

## DISCUSSION

The results of this study, which aimed to evaluate the midwifery Ph.D. curriculum, showed that there is no statistically significant difference in the mean score of opinions of midwifery students and faculty members in any of the five areas, i.e., context, input, process, output, and general evaluation. The American College of Nurse-Midwives, responsible for ensuring the quality of midwifery educational programs, has emphasized providing opportunities for training midwifery experts at the highest academic level to meet the increasing healthcare needs (12). The adequate needs assessment for launching a discipline is one of the major criteria in the area of context. In the present research, more than half of the participants in both groups regarded the launch of a midwifery Ph.D. course as necessary. They believed that the society needs a midwifery Ph.D. course to do evidence-based research in midwifery, teach specialized midwifery courses at all levels, provide specialized clinical midwifery services, and offer midwifery-related policy-making, management, and planning. The first step to develop a curriculum is to determine the educational needs. A curriculum applies logical analysis in

education, i.e., efficiency enhancement and its effect on meeting the needs of learners and society (13). The needs assessment at various levels improves and enhances the quality of medical education, efficiency, and effectiveness of the health system (14). In every country, the Ph.D. curriculum is designed according to the nation's needs and conditions, and the issues related to clinical and care problems and how to analyze and address them are considered in new curriculums (15).

In the input area, most faculty members and more than half of the students reported the midwifery Ph.D. curriculum as appropriate. In the present study and according to the students' and faculty members' point of view, the highest mean scores in the area of input belong to the questions stating "the access to the computer, the Internet, and databases, and library facilities are proportional to the number of students and their educational needs on this course.", and "the expertise of advising professors is proportional to the field of midwifery and reproductive health", respectively. Abdi Shahshahani et al. reported that students perceived the computer facilities, internet access, access to databases, and library facilities to be suboptimal. Additionally, faculty members perceived the expertise of midwifery and reproductive health supervisors to be suboptimal (11).

In addition, according to the students and faculty members, the lowest mean scores belong to the questions stating "the presented courses in this field meet your expectations,

educational needs, and professional capabilities" and "the educational program achieves the course's goals", respectively. Abdi Shahshahani et al.'s research revealed that the students expressed partial satisfaction with the extent to which the courses met their educational needs. Similarly, the faculty members perceived that the current curriculum only partially achieved the intended course objectives. Furthermore, according to the faculty members and students, the highest mean scores belong to the items "the professors' knowledge of various teaching methods and the practical features of each method" and "the proportionality of the library access time and reasonable needs of students", respectively (11). Kim et al. reported the poor performance of presented Ph.D. courses in meeting the educational needs and students' expectations (16). In an Iranian study on the evaluation of nursing Ph.D. courses, students believed that most courses are theoretical and that there is no independent course credit regarding care and clinical problems and activities (15,17,18). Since midwifery is based on applied sciences, the curriculum planners of the Ph.D. course have taken this fact into account. Accordingly, the Iranian midwifery Ph.D. course includes clinical training in birth control and maternal and newborn care in labor and delivery room and postpartum wards.

The findings of this study showed that in the process area, 52.4% of students and 66.7% of faculty members reported the status as appropriate. According to both groups of faculty members and students, the lowest mean score belongs to the question stating "There is a plan for communication between the students and graduates of this course at your university and other Iranian universities". According to students, the question related to adequate and suitable interaction between the midwifery department and other departments in the school/university also had a low score. In the John Hopkins Bloomberg School of Public Health, the field of maternal, fetal, and prenatal health, which is the closest field to the midwifery Ph.D. in Iran, is presented in the Department of Population, Family, and Reproductive Health, which is an interdisciplinary group in the school of public health (19). In an article on interdisciplinary challenges of the neuroscience Ph.D. course, Holley suggested that the interdisciplinary approach demonstrates the departure from the traditional structure of Ph.D. in American higher education. It is necessary to combine the potentials of invested groups, and interdisciplinary integration and student learning should be followed up and implemented through an active and coordinated process. At the same time, it is beneficial for any academic discipline that students communicate with other universities that run the same programs (20).

In the output area, 66.7% of participants in both groups reported an appropriate status. According to the students and faculty members, the lowest mean scores belong to questions stating, "the midwifery Ph.D. curriculum meets the needs of society" and "the department/school plans to employ the research results to foster and enhance midwifery", respectively. Nowadays, universities are obliged to meet the needs of society, which will be accomplished by transforming theoretical knowledge into practical one.

Meanwhile, universities play the role of knowledge producers, while organizations and societies are the knowledge receivers. Translating the research findings into a functional method is a major part of knowledge transfer. Knowledge translation is a method to employ the universities' theoretical knowledge practically. The Canadian Institutes of Health Research defines knowledge translation as "the production, exchange, incorporation, and application of knowledge in the complex system of interactions between researchers and users in an attempt to accelerate the achievement of research benefits, i.e., improving the society's health, health services, and outcomes, and enhancing the healthcare system" (21). Establishing suitable infrastructures for knowledge translation should be among the mental priorities of governmental institutes and organizations.

Most students (81%) and faculty members (77.8%) reported the general evaluation of the midwifery Ph.D. curriculum as appropriate. As feedback from students and faculty members, the midwifery Ph.D. education program has obtained the lowest mean score. However, the two questions on the necessity of the course and course's curriculum change received the highest score. Students and the administrators' efforts to create conducive circumstances allowed the students to be more clinically engaged, and they also asked for more collaboration from the team of gynecologists.

Although this was the first study to analyze midwifery Ph.D. programs in Iran, it did have several limitations. First, there was the chance that participants may refuse to reveal their true identification information; therefore, by providing enough justifications, they were assured that their information would remain anonymous. The second limitation was the small sample size due to the uniqueness of the comments to midwifery Ph.D. students and faculty members of Tabriz and Ahvaz faculties of nursing and midwifery.

In terms of context, input, output, and general evaluation, most students and faculty members reported the midwifery Ph.D. curriculum as appropriate. Moreover, in terms of education and research, they found the existing facilities suitable and the curriculum appropriate to the needs and developments of society. However, training proficient midwives who can analyze the challenges of the midwifery profession and provide suitable solutions requires a curriculum to enhance the Ph.D. students' decision-making skills as well as their creative and critical thinking power in solving problems of the midwifery profession.

The Ph.D. students reported the process as less appropriate and emphasized the need for greater emphasis on clinical upskilling for midwifery Ph.D. students. Additionally, they requested that administrators take steps to create a supportive environment that would enable students to be more actively involved in clinical practice. It may be beneficial to implement a continuous evaluation process in order to enhance and refine the quality of the midwifery Ph.D. program.

**Ethical considerations:** Ethical issues including plagiarism, informed consent, misconduct, data fabrication and /or falsification, double publication and/ or submission, redundancy, etc. have been completely observed by the authors. This study was approved by the ethics committee of

the research and technology deputy of Tabriz University of Medical Sciences, Ethics code: IR.TBZMED.REC.1399.863.

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