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The Relationship between Experiences Level and Clinical Decision-Making Skill in Midwifery Students: A Cross-Sectional Study

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Abstract

Background: Development and assessment of clinical decision-making skills are essential in midwifery education because of their role in mothers' and infants' safety. Therefore, the present study's primary objective was to evaluate the relationship between experience levels and clinical decision-making skills using the key features (KFs) examination.

Methods: One hundred and two midwifery students in five different education levels participated in this cross-sectional study through convenient sampling. Twenty KFs questions were designed based on the principles of the KFs examination. The participants' information, including grade point average (GPA), theoretical and practical scores of the obstetrics course, were collected. KFs scores were compared according to students' training semester by one-way analysis of variance (ANOVA). Pearson correlation was conducted to explore the correlation between KFs scores and GPA as well as theoretical and practical scores. All statistical analyses were performed at a significance level of 0.05 ($p \leq 0.05$). We used five kinds of effect size calculators, which include mean difference (MD), standardized mean difference (cohend), partial Eta-squared, Cohenf, and partial omega-squared.

Results: There was no correlation between KFs scores and the grade point average, theoretical exam scores, and practical exam scores. KFs scores linearly rose as the learners' level increased with a mean± SD score of 7.61±1.09 during the third semester compared to 11.55 ± 1.89 during the eighth semester (p=0.001). The effect size of this result was large (partial omega square=0.35, partial eta square=0.38 & cohen's f=0.73). The largest SMD was related to the comparison of KFs scores between the eighth and third semester (MD=3.58, SMD=2.554 [CI 95%: 1.719-3.389], p-value= 0.001), and the lowest was related to the comparison between the third and fourth semesters (MD=0.354, SMD= 0.2 [CI 95%: -0.421-0.821], p=0.987).

Conclusion: Establishing proficiency in clinical decision-making skills is a linear process greatly enhanced by experience, clearly shown by the present study results. Using KFs examination and obtaining extensive evidence to its benefit can allow us to renegotiate proficiency evaluation methods for students in clinical fields. the education curriculum should focus more on identifying clinical KFs skills than merely teaching knowledge about disease processes.

Keywords: Clinical Reasoning, Clinical Decision Making, Problem-Solving, Clinical Evaluation, Clinical Competence, Clinical Skill

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↑What is "already known" in this topic:
Clinical decision-making is a critical skill for the safety of mothers and infants. The KFs is an approach used to assess the decision-making skill of undergraduate medical and paramedical students. the development and assessment of this cognitive skill are essential in midwifery education.

→What this article adds:
The promotion of expertise is a linear process, and clinical mental structure develops by expertise and knowledge. Clinical experience has a vital role in clinical decision-making, and it leads to comparing the clinical situations to retrieve mental patterns.

Introduction

Challenging and diverse medical issues of patients (1-3) lead to clinical decision-making as a vital and essential skill for every clinician (4-6). This skill reflects the cognitive process (7), and it is the output of the clinical reasoning process (8) that identifies, integrates, and interprets clinical data for the diagnosis of the disease (5, 9). Accordingly, the acquisition of clinical decision-making skills is essential for undergraduate clinical students (10), and its evaluation is the heart of clinical competency assessment (11).

The KF_s is an approach used to assess the decision-making skill of undergraduate medical and paramedical students (10). Originating from the First Cambridge Conference on Medical Education in 1984 (12), the KF_s approach was defined as an essential step in the process of clinical problem-solving (9, 10). The KF_s can be related to every step of the clinical reasoning process, from data gathering to patient management (8). Since the skill of clinical reasoning is influenced by experience (5), KF_s can be considered one of the distinctive characteristics of experienced medical experts (7) and the discriminating factor between novice and experts in the clinical field (3).

In midwifery, clinical decision-making is a critical skill for the safety of mothers and infants. It has a vital role in reducing the incidence and prevalence of adverse events such as morbidity and mortality rate. Therefore, the development and assessment of this cognitive skill are essential in midwifery education. However, according to our knowledge, there is a lack of robust evidence about improving decision-making skills during clinical and theoretical education in midwifery. Accordingly, we hypothesized that with the advancement of training for midwifery students, the clinical decision-making skills would be improved. Therefore, the main objective of the present study was to assess the relationship between the level of education (semester) with the improvement of clinical decision-making skills using the KF_s exam during midwifery education.

Methods

Setting and participants

Bachelor of Science in midwifery in Iran is a four-year program, equal to eight semesters of study after high school. Participants of this study were midwifery students from the Midwifery School of Shiraz University of Medical Sciences who had taken theoretical or practical obstetrics courses during the second term of 2018-2019. One hundred and two students from the third (20 students), fourth (20 students), fifth (22 students), seventh (20 students), and eighth (20 students) semesters enrolled in this study.

Materials, Survey Design, and Implementation

First, the clinical issues that midwifery students must be proficient in, based on the obstetrics course's educational goals, were identified. Next, each case's most prominent issues were extracted. Then, 20 clinical scenarios with a question to identify KF_s were designed by one experienced associate professor of gynecology and obstetrics (N.A) and one expert in midwifery education (So.D); they were expert in designing KF_s test. In addition So.D was Ph.D of medical education. These scenarios were then reviewed, edited, and approved by a ten-member panel of experts in the midwifery field. All of the KF_s scenarios confirmed by M.A (expert in medical education).

Each clinical scenario was followed by 12, 16, or 20 clinical option identifying statements (Appendix 1). For every four clinical options, there was only one correct answer. Therefore, each clinical scenario could have 3, 4, or 5 correct KF_s. Every clinical scenario question had one point (each correct answer carried 0.2 or 0.25 or 0.33 points based on the total number of correct KF_s present in that scenario). Negative points were not given to incorrect options. The final KF_s score result was calculated out 20 points (1 point per clinical scenario). The following example demonstrates a typical KF_s scenario followed by 12 clinical alternatives which had only three correct options. Therefore, in this scenario, if students identify all three correct KF_s, they will get one point. If they identify only two correct options, they will get 0.66 points as one correct KF_s identification carries 0.33 points (Text Box 1).

The KF_s exam was conducted at the end of the academic semester in summer 2019. Before starting the exam, N.B educated participants on how to answer the questions.

Text Box 1. KF_s sample scenario

A 23-year-old woman, with GA: 38WK, having sudden onset pain in the upper right quadrant which started the night before referred to the clinic. She had nausea and vomiting and fever of 38.5 C and blood pressure of 130/80 mm of Hg. In the CBC test, WBC was 19,000.
What are next best steps to make a proper diagnosis? You are allowed to select 3 items.
A) Evaluation of Uterine contractions
B) Evaluation of Urine protein levels (Correct)
C) Evaluation of Abdominal ultrasound (Correct)
D) Diagnostic laparotomy
E) LFT (Correct)
F) OB Sonography
G) Laparoscopy
H) Fibrinogen level evaluation
I) Taking the family history
J) PR
K) RR
L) Vaginal exam

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Table 1. Interpretation of correlation (13)

Size of Correlation	Interpretation
0.00 to .30 (0.00 to -0.30)	Negligible correlation
0.30 to 0.50 (-0.30 to -0.50)	Low positive/negative correlation
0.50 to 0.70 (-0.50 to -0.70)	Moderate positive/negative correlation
0.70 to 0.90 (-0.70 to -0.90)	High positive/negative correlation
0.90 to 1.00 (-0.90 to – 1.00)	Very high positive/negative correlation

Besides, we wrote test instructions on the first page of the test sheet (Appendix 1).

Other markers of students' academic performance were collected from Dean's office for the second term of 2018-2019. Students' GPA was calculated at the end of the semester, which ranged from 0 to 20. In the midwifery curriculum, students of the third and fourth semesters usually have theoretical and practical exams. Students in the fifth semester have only theoretical exams, while students of the seventh and eighth semesters have only practical exams. All theoretical and practical course scores were collected from the final exam, ranging from 0 to 20.

Statistical analysis

Our primary hypothesis was that with the advancement of training for midwifery students, the decision-making skill would improve. For our primary and secondary purpose, we analyzed the data using Stata and MedCalc. For the descriptive analysis of the data, we used descriptive statistics. For calculating the correlation, we used the scatter plot and the Pearson test; the interpretation of the correlation size is according to Table 1.

The ANOVA test was performed to analyze the differences between the students' KF_s scores in different semesters, as there were five groups. To find the difference of KF_s scores from one semester to another, we used Scheffe as a posthoc test. We used five kinds of effect size calculators which included mean difference (MD), standardized mean difference or SMD ($cohen_d$) (<0: adverse effect, 0-0.1: no effect, 0.2-0.4: small effect, 0.5-0.7: intermediate effect, ≥0.8: large effect), partial Eta-squared (<0.010: no effect, 0.010-0.059: small effect, 0.060-0.110: intermediate effect, ≥0.110: large effect) (14), $Cohen_f$ (<0.13: no effect, 0.14-0.19: small effect, 0.40-0.69: moderate effect, >0.70: high effect) (15) and partial omega-squared (0.01-0.05: small effect, 0.06-0.13: moderate effect, >0.14: large effect) (16).

Results

One hundred and two midwifery students participated in this study from the third (20 students), fourth (20 students), fifth (22 students), seventh (20 students), and eighth (20 students) semesters in this cross-sectional study. According to each semester, the results of the descriptive statistics related to the KF_s, GPA, theoretical exam scores, and practical exam scores are described in Table 2 (all scores are from a total of 20 points).

KF_s scores increased as they continued their training from the third to the eighth semester. The lowest and highest KF_s mean scores were related to the students in semesters three (7.61±1.09) and eight (11.55±1.89), respectively (Table 2 & Fig. 1).

There is a non-significant correlation between the practical exam scores and KF_s scores (0.241) and a low positive correlation between the theoretical scores and GPA and KF_s scores (0.426 & 0.354), respectively.

There was a statistically significant difference (p≤0.005) in KF_s scores according to their educational level (semester) according to ANOVA analysis (Figs. 1 & 2).

Values of partial omega square (0.35), partial eta square (0.38), and $cohen_f$ (0.73) show the high effect of experience (semester level) on KF_s scores. The largest and lowest mean difference (MD) were between the third, eighth (3.58), and fourth (0.354) semesters, respectively. The largest SMD was related to the comparison of KF_s scores between the eighth and third semester (MD=3.58, SMD=2.554, CI 95%: 1.719-3.389, p-value=0.001), and the lowest was related to the comparison between the third and fourth semesters (MD=0.354, SMD= 0.2, CI 95%: -0.421-0.821, p=0.987). The post-hoc Scheffe test results showed a statistically significant difference in the students' KF_s scores in seven and eight compared to those of the students in semesters three, four, and semester eight compared to those of the students in semesters five. There was also a statistically significant difference in KF_s scores of students in semester seven compared to KF_s scores of the students in semester three (p<0.05) (Fig. 2).

Discussion

Decision-making is a cognitive process (7), and it is the output of the clinical reasoning process (8) that plays an essential role in the accurate diagnosis and management of diseases (5, 17). Thus, medical education institutes' fundamental responsibility is to lead medical and paramedical students from the path of memorizing information to becoming analytical problem solvers who approach clinical cases in the best possible manner (18). Identifying KF_s of clinical scenarios can lead to successful clinical reasoning

Table 2. GPA, Theoretical Exam Scores, and Practical Exam Scores

variable	Semester 3 N=20	Semester 4 N=20	Semester 5 N=22	Semester 7 N=20	Semester 8 N=20
GPA	15.82 (1.29)	15.68 (1.83)	15.32 (1.26)	15.85 (1.05)	17.61 (0.99)
Theoretical Exam Scores	15.23 (1.37)	14.73 (1.23)	14.86 (1.89)	-	-
Practical Exam Scores	18.04 (0.35)	18.00 (1.16)	-	17.91 (0.47)	18.12 (0.63)
KFs total score	7.61 (1.09)	7.96 (2.22)	8.81 (2.23)	8.81 (2.23)	11.55 (1.89)

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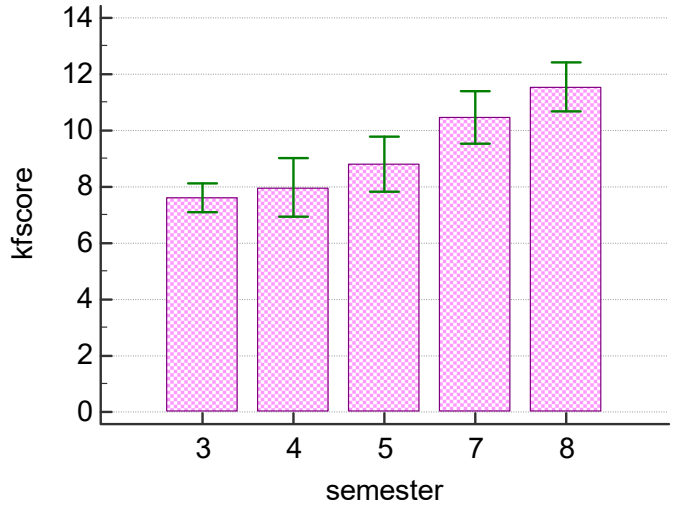

Fig. 1. Comparison of the total KF_s scores according to educational semester ($p<0.001$, adj R-squred= 0.35, root MSE=1.94)

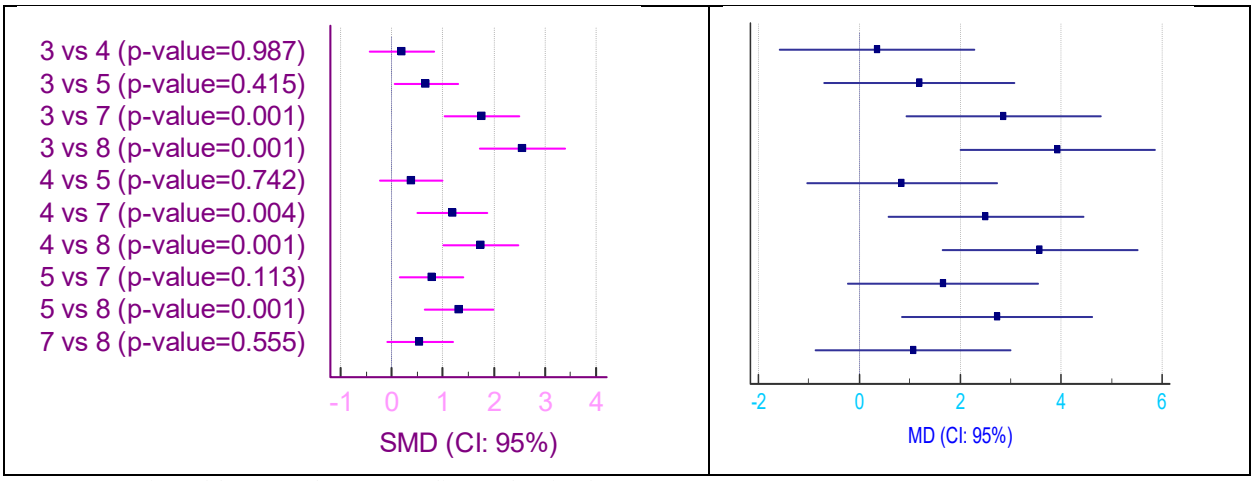

Fig. 2. Comparison of the KF_s total scores according to educational semesters

and clinical decision-making under the influence of knowledge and experience (19). Development and assessment of clinical decision-making skills are essential in midwifery education because of their role in mothers' and infants' safety. Therefore, the present study's primary purpose was to assess the relationship between clinical experiences and the improvement of clinical decision-making skill using the KF_s examination.

The promotion of expertise is a linear process (20), and clinical mental structure develops by expertise and knowledge (21). Clinical experience has a vital role in clinical decision-making (22), and it leads to comparing the clinical situations to retrieve mental patterns (3, 22). The present study confirmed that clinical experience had a meaningful and substantial effect on clinical decision-making skills. In this regard, the results of the present study confirmed that students in higher levels of midwifery considerably recognized more KF_s than students in the lower levels. Therefore, comparing the KF_s scores of students at various educational levels of midwifery at the Bachelor of Science level with the grades from the KF_s examination supports the above notion. The results of the present study confirmed a meaningful difference between the lower and higher-level students in clinical decision-making ability with a substantial effect. Pairwise comparison, according to the semesters, indicated a small to substantial effect of the role of experiences in clinical decision-making, and experience of more than one semester showed considerable change and larger effect on the total score of KF_s. Although, due to the small sample size, these effects are not statistically meaningful at each level (except the comparison between the eight and third to fifth semesters as well as the seventh and third to fourth semesters). In future studies, the role of experiences in the decision-making needs to be assessed by a larger sample size in order to get confirmatory results.

clinical scenarios with a question to identify KF_s were designed according to all of the topics taught at three and four semesters by the theoretical and practical curriculum. We expected all of the student acquired good scores. But, the highest KF scores were achieved in the eighth semester; however, it was still lower than 75% of the total score (total score of KF_s test was 20), indicating that midwifery students were not as competent to identify KF_s as they should be. These results might be due to the direct result of inattention to teaching clinical decision-making skills

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and helping students to identify key signs and symptoms of correct disease diagnosis. On the other hand, the GPA, theoretical exam scores, and practical exam scores were much higher than 75% of the total score, which indicates that our educational system is paying more attention to theoretical and practical skills and does not adequately address clinical decision-making skills. Since midwifery graduates tend to have a great number of sensitive cases of women and their delivery issues, their competency in clinical decision-making skills and correct, timely identification of illnesses can play a vital role in reducing undesirable consequences and elevating health indicators in Iran. It is imperative that the weaknesses of midwifery students' education in diagnosing and treating illnesses be identified and addressed; besides, educational institutes should not resort only to theoretical and practical skills in their curriculum. Educational policymakers and clinical teachers must develop and assess midwifery students' decision-making skills.

Previous studies in other medical sciences that assessed decision-making in undergraduate students with KF_s examinations showed the same results (6, 23). These results might be due to the widespread use of the multiple-choice question exams with one possible answer, which does not evaluate the student's qualifications in synthesizing information and analyzing symptoms leading to sound clinical decision-making – an essential skill in effective medical practice (17). This study found an ignorable correlation coefficient between the KF_s total scores and the theoretical scores. These results are probably due to the final exams' nature, which considers the students' knowledge at the level of memorizing information and does not evaluate their analytical skill or clinical decision-making potential. Similar to our results, Zamani et al. (17) showed a low to moderate correlation coefficient between the KF_s examination and the multiple-choice test given to the obstetrics course. In this regard, Valerie et al. (8) show that there was a negligible low positive correlation between KF_s scores and the National Board of Medical Examiners Subject Examination (NBME-SE) scores. Besides, there was no meaningful correlation between the KF_s total scores and practical exam scores. These results could be because the practical exam is not only a measure of their capability for diagnostic reasoning and gathering useful information, but it also takes into consideration a combination of various clinical merits, including knowledge base, practical skills, competence in identifying differential diagnosis, correct diagnosis, patient management, and communication skills.

Study Limitations

Our study had several limitations. Firstly, the cross-sectional design did not allow testing and confirming a casual hypothesis. In addition, external validity is limited due to convenience sampling. Another limitation is that we did not control potential confounders/covariates that could affect clinical decision-making skills. The other limitation of the present study was the low sample size, which prevented us from presenting a prediction model. This small sample size also prevented us from reaching confirmatory results compared to the semesters mentioned in this study. Not having theoretical scores of the students in semesters seven and eight and the students' practical scores in the fifth semester were barriers to using the linear regression model. Utilizing this type of examination (KF_s) method may be challenging to adopt because of the teachers' unfamiliarity with its design. This problem can be easily solved by training teachers and involving them in KF_s designing. Thus, despite the difficulty of the design, implementation, and scoring, this test introduces a new perspective on assessing and evaluating students' cognitive skills.

Conclusion

Proficiency in clinical decision-making is determined by clinical experience, responsibilities a student is given (number and variety of patients taken by the student), educational techniques, and evaluation methods for students' theoretical and clinical skills. KF_s can play a significant role in evaluating students' clinical decision-making potential and can be used as an assessment tool to predict students' success in specialized clinical tests. There is an urgent need for numerous, precise, and in-depth studies using various clinical reasoning and clinical decision-making assessment tools to examine midwifery students' ability to identify and gather key information to diagnose patient conditions. This can be accomplished using the KF_s examination, which is capable of providing a possible prediction for the weaknesses, which, in turn, can be used for making new policies in the educational system for students' evaluation.

We hope that the evidence provided by this study will pave the way for changes in teaching and evaluation systems in clinical sciences, especially the midwifery major. We hope our results are the start of a movement to assess and psychologically analyze various clinical reasoning testing methods such as CRP, script concordance, and puzzle test. We hope that researchers perform other clinical reasoning tests to check the relation of decision-making skills and experiences level in health profession sciences especially midwifery students. In the future, researchers may use the abundant evidence provided by these studies to complement or replace the current traditional testing systems with these assessment methods. We suggest that various clinical reasoning skill tests, especially the KF_s examination, be given to students of this field at four levels of expertise: Bachelor's, Master's, Doctoral, and instructor level. Simultaneously, evaluating the test results at all the mentioned levels will provide substantial and precise evidence regarding this test's potency in differentiating the levels of expertise among students and practitioners.

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Ethics approval and consent to participate

Since this study was conducted on humans, first, the Research Ethics Committee of Shiraz University of Medical Sciences approved this study with the code of IR.SUMS.REC.1396.s403. Besides, the students were assured that their information would remain confidential, and before conducting the study, written informed consent was obtained from all the students.

Conflict of Interests

The authors declare that they have no known competing financial interests. So.D and S.D are siblings; it could not have any influence on the work reported in this paper.

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Appendix 1

In His Name

The current exam is called "The Key Features of Clinical Reasoning" (in short KF_s) and has been designed to evaluate the psychometric properties and midwifery students' clinical reasoning ability. The answers to the current questions are similar to multiple-choice questions (MCQs), except that you can choose three or more options - the number of allowed options mentioned at the end of each question. Please make sure that your answer sheet includes your first and last name in order to use the pregnancy, childbirth, practical, and total average scores to accurately evaluate this kind of clinical reasoning exam. It is worth noting that this exam's score will not affect your midterm and final exams. The scores will be used anonymously for research projects. We would like to thank you in advance for your kind cooperation.

Sincerely Yours

Dr. Mitra Amini, Dr. Somayeh Delavari

Student Name:
End of semester:
University name:

Which of the following courses have you completed in the current semester*?*

a) Pregnancy and childbirth-1
b) Pregnancy and childbirth-2
c) Pregnancy and childbirth-3
d) Internship in the field-1
e) Internship in the field-2

Please do not write anything here*:*

Total GPA:
Your score of Practical Pregnancy and Childbirth course in the current semester:
Your score of Theoretical Pregnancy and Childbirth course in the current semester:

1. A 23-year-old woman referred with GA: 38WK with a sudden onset pain in the upper right quadrant, with nausea and vomiting and fever of 38.5 and blood pressure of 130/80 started the night before referred to the clinic. In the CBC test, WBC was 19,000.
   What do you need to do for diagnosis? You are allowed to select three items.
   1) Evaluation of Uterine contractions
   2) Evaluation of Urine protein levels
   3) Evaluation of Abdominal ultrasound
   4) Diagnostic laparotomy
   5) LFT
   6) OB Sonography
   7) Laparoscopy
   8) Fibrinogen level evaluation
   9) Taking the family history
   10) PR
   11) RR
   12) Vaginal exam

2. A 30-year-old G3Ab1P1L1 woman with GA: 26WK has been in contact with a person suffering from rubella. Which of the following items would be helpful in infection diagnosis in this patient? You are allowed to select three items.
   1) Lymphadenopathy
   2) Lymphocytosis
   3) Temperature
   4) Increased IgG after exposure
   5) Increased amount of specific anti-rubella IgM antibody
   6) Leukopenia
   7) History of hepatitis
   8) Thrombocytopenia
   9) Leukocytosis
   10) PR
   11) Abdominal ultrasound
   12) Fetal size

3. A 27-year-old G1 woman with GA: 32WK has been complaining of ROM for the last 5 hours. The patient has mild uterine contractions. Painful vesicular lesions are seen in the patient's genital area. What are the most appropriate interventions? You are allowed to select three items.
   1) Induction and vaginal delivery
   2) Tocolytic therapy and Complete Bed Rest
   3) Betamethasone administration
   4) Cesarean section
   5) Keflin (2 gr) iv administration
   6) Antibiotic therapy and waiting for labor pain
   7) Dexamethasone administration
   8) Betamethasone administration and vaginal delivery
   9) Abdominal ultrasound
   10) NST
   11) OCT
   12) Emergency BPP

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4. A 32-year-old woman with G2L2, GA: 18WK, BP: 140/90 referred for pregnancy care. Uterine consistency is quite soft, and HF is 22cm. The fetal heart's sound is not heard, and the patient suffers from severe nausea and vomiting at the onset of pregnancy. Which of the following interventions would be helpful in accurate diagnose? You are allowed to select three items.
   1) OB ultrasound
   2) Measuring BHCG
   3) Preeclampsia evaluation
   4) Chest Xray
   5) Measuring the levels of Serum hepatic transaminase
   6) Abdominal and pelvic CT
   7) MRI
   8) Abdominal ultrasound
   9) fetal FL measurement
   10) HC fetal measurement
   11) Vaginal examination
   12) Fern test

5. A 20-year-old G1 woman with BP: 90/60, GA: 32 WK referred to the emergency unit due to painful uterine contractions. The patient's vaginal examination is as follows:
   Dill: 3cm, eff: 40%, pre: vx, sta: float, m: intact.
   What is the appropriate intervention for the patient? You are allowed to select three items.
   1) Betamethasone administration
   2) Expectant management of the pregnancy
   3) Oxytocin for termination of pregnancy
   4) Tocolytic therapy
   5) Cesarean section for prevention of brain injury
   6) Nifidipine administration
   7) Dexamethasone administration
   8) Antibiotic administration
   9) NST
   11) OCT
   10) Fern Test
   12) Ultrasound

6. A woman with GA: 30WK referred to abdominal tenderness and tachycardia, and a vaginal examination of dill: 1finger eff: 30% m: RoM (8hrs ago) pre: vx and sta: -3, has referred. Her temperature was 38.4, and FHR was 148. Which of the following interventions are appropriate? You are allowed to select three items.
   1) Antibiotic therapy
   2) Termination of pregnancy
   3) Induction of initiation 12 hours after discharge
   4) Magnesium sulfate
   5) ECG
   6) Expectant management of the pregnancy
   7) Betamethasone administration
   8) Nifedipine administration
   9) NST
   10) OCT
   11) BPP
   12) Emergency ultrasound

7. A 28-year-old woman, G3P1L1A1, GA: 38, is receiving induction due to ROM. When the induction reached 45 drops per minute, the fetal heart rate dropped, and the patient's contractions lasted for 1 minute and 5 seconds. Besides, the contractions interval reached 55 seconds. What are the appropriate interventions for this patient? You are allowed to select three items.
   1) Stopping labor induction
   2) Using Lactated Ringer's Injection freely
   3) Patient sleeping on left side
   4) Patient preparation for cesarean section
   5) Stretching for faster delivery
   6) Emergency ultrasound
   7) OCT
   8) Emergency BPP
   9) NST
   10) Expectant management of the pregnancy
   11) Treatment with magnesium sulfate
   12) Checking the vital signs

8. A 33-year-old woman referred with G1, GA: 31WK with BP: 150/90 and +3 edema, +4 proteinuria, and plasma creatinine: 1.7. What are the best interventions for her? You are allowed to select three items.
   1) Betamethasone + Adalat Administration
   2) Lasix Administration
   3) Betamethasone Administration
   4) Dexamethasone Administration
   5) Termination of pregnancy
   6) Magnesium Sulfate Administration

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7) Hydralazine and Betamethasone Administration up to 24 hours
8) Expectant management for the labor pain
9) OCT
10) Emergency BPP
11) NST
12) Expectant management for the labor

9. A 20-year-old woman, G2P1D1, GA: 12WK, without any history of diseases referred for the first time to prenatal care. The patient's previous child has had intrauterine death. Which of the following interventions are appropriate? You are allowed to select 3 cases.
1) CBC
2) GTT
3) LDH
4) GCT
5) HBS Ag
6) LFT
7) Uric Acid
8) Fibrinogen level
9) ALT
10) CRP
11) Urine Protein
12) AST

10. A 20-year-old female G2P1L1, GA: 39, FHR: 130 referred to the emergency unit due to labor pains. The vaginal examination: 2finger 40% ROM (thick meconium) vertex.
What are appropriate interventions for this patient? You are allowed to select three items.
1) Patient preparation for cesarean section
2) Start induction
3) Using vaginal prostaglandin
4) Reserving two blood bags
5) Keflin 2g injection
6) NST
7) OCT
8) Strip patient for rapid delivery of labor
9) BPP
10) Stretching for faster delivery
11) Emergency ultrasound
12) Fern test

11. A female, G2A1, referred with a 30-week twin pregnancy with HOF 40 cm. In ultrasound examination, one fetus was oligohydramnios, and the other one was polyhydramnios, and only one placenta was observed. Which of the following items do you need to access the most likely diagnosis? You are allowed to select four options.

1) Assessing both fetal size at ultrasound
2) Assessing both fetal movement
3) NST
4) Fetal HCT differences
5) WBC check
6) Observing the fetal bladder at ultrasound
7) CRP check
8) CHF check-in recipient fetus
9) Uterine tenderness
10) Speculum examination for rupture of membranes
11) Lung examination of the fetus
12) Doppler examination of both uterine artery
13) Biophysical profile examination
14) Pus vaginal discharge
15) ROM history
16) Sex of the fetus determination

12. A 25-year-old woman refers to G1 for 25 weeks, and her blood pressure is 150/90. She has suffered from headaches for the last three days. Which of the following items are helpful for the most likely early diagnosis? You are allowed to select five options.
1) Patient Age
2) Blood Pressure
3) Disease Graviditatis
4) Family History
5) Pregnancy Age
6) Patient General Edema
7) HTN history
8) Amniotic Fluid Ultrasound
9) Proteinuria
10) Fetal Size in ultrasound

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11) Blurred vision
12) PR
13) Epigastric pain
14) Overweight
15) Platelet count
16) Facial swelling
17) MRI
18) CT scan
19) CBC
20) Migraine history

13. A pregnant woman, G1, 29 weeks old, referred to the clinic with lupus, HOF is 26cm. Which of the following items do you need for the most likely diagnosis? You are allowed to select five options.
1) Fetal TCD measurement
2) C3-C4 check
3) Fetal lung maturity test
4) Serial ultrasound
5) Maternal weight gain during pregnancy
6) Biparietal diameter measurement in fetus
7) History of medications
8) AC measurement in fetus
9) Fetal movement
10) Maternal blood pressure changes
11) Doppler ultrasound
12) ACLA check
13) Measuring Blood Pressure
14) Amount of proteinuria
15) Amniotic fluid level
16) FL fetal measurement
17) HC measurement in fetus
18) Vaginal examination
19) Estrogen titration
20) Progesterone titration

14. A 35-year-old, GA: 6wk woman, who is pregnant with IVF refers with abdominal pain while uterine is empty on ultrasound. Which of the following items do you need for the most likely diagnosis? You are allowed to select four options.
1) Pelvic pain
2) Spotting
3) Uterine curettage
4) Severe vaginal bleeding
5) HCT examination
6) Tissue withdrawal
7) Closed cervix
8) Abdominal tenderness
9) Prior menstrual history
10) Tenderness during cervical movement
11) BP Patient
12) BHCG titration
13) Estrogen titration
14) Progesterone titration
15) TSH titration
16) T3 & T4 titration

15. A female G2A0P1L0 referred due to a history of leakage. On examination, watery fluid was observed in the posterior vernix. The vital signs are as follows:
BP: 120/60 mmHg PR: 80 / min PR: 16 / min
Which of the following do you need for the most likely diagnosis? You are allowed to select four options.
1) Previous PROM History
2) Fern Test
3) Vaginal discharge
4) Vaginitis
5) Previous Infection
6) Vaginal Discharge like cottage cheese
7) Ultrasound
8) Vaginal pH
9) Fibronectin Check
10) Fever
11) History of Trauma
12) History of urinary incontinence
13) Urinary irritation and recurrence
14) Vulvar erythema and vulvar erosion
15) Dyspareunia
16) Vulvar irritation and itching

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16. G1, a 15-week pregnant woman, refers to emergency unite with spotting. She has stable vital signs, and her Hb is 11. The normal fetus is found in ultrasound. Which of the following items do you need for the most likely diagnosis? You are allowed to select four options.
1) Fetal heart rate
2) The amount of bleeding
3) Uterine cramp
4) General abdominal pain
5) History of medications
6) Ultrasound
7) History of uterine infection
8) Embryo size
9) Fever
10) Hb recurrence
11) Vital signs check
12) Back Pain
13) Cervical examination
14) BHCG titration
15) Progesterone titration
16) Uterine size

17. A pregnant woman (18 weeks) referred to the hospital due to back pain and severe bleeding. The following are her vital signs:
PR = 105 BP = 90/60 RR = 16
Which of the following items do you need for the most likely diagnosis? You are allowed to select four options.
1) Fever
2) Abdominal pain
3) Cervical dilatation
4) Rupture of membranes
5) Cervical tissue
6) BHCG titeration
7) Ultrasound
8) Hb test
9) History of Medications
10) Yolk sac size
11) Fetal heart rate in ultrasound
12) Examine the patient's ALT titration
13) Tissue inside the uterus
14) Progesterone titration
15) Estrogen titration
16) Patient AST titration

18. A 22-year-old woman referred with G3L2, GA: 32wk, complaining of bleeding and minor abdominal pain since an hour ago (BP: 110/80, PR: 92 / min, FHR: 130 / min).
Which of the following items do you need for the most likely diagnosis? You are allowed to select five options.
1) Temperature
2) Abdominal Tenderness
3) Cervical Dilatation
4) Rupture of membranes
5) Cervical Tissue
6) BHCG Titer
7) Cervical Effacement
8) Hb Test
9) History of Medications
10) Bleeding Value
11) NST
12) BG, RH check
13) Bleeding Color
14) Ultrasound
15) Uterine Size
16) Estrogen titration
17) Progesterone titration
18) Tenderness during Cervical Movement
19) Previous History of PROM
20) Epigastric Pain

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19. A 36-year-old woman referred with G3D1 Ab1 at 34 weeks gestation, complaining of weakness, thoracic pain, shortness of breath, and cough that started last night. What information is needed for the most likely diagnosis*?* You are allowed to select four options.

1) Pleural pain
2) Pregnancy age
3) History of Cesarean section
4) Breath shortness
5) Weakness
6) Cervical dilatation
7) Cervical effacement
8) FHR
9) PR
10) Temperature
11) History of Medications
12) Contraction stress test
13) Ultrasound to assess amniotic fluid
14) Fetal size
15) Epigastric pain
16) Estrogen titration

20. A 24-year-old woman, G3L1D1 (30 weeks), referred to the emergency department due to seizure. On examination, the patient is in a deep coma. Which of the following items do you need for the most likely diagnosis*?* You are allowed to select five options.

1) Temperature
2) History of seizures
3) Patient blood pressure
4) Seizures in recent hours
5) Brain MRI
6) Urine protein level
7) LDH level
8) WBC level
9) PR
10) RR
11) FHR
12) BP
13) Patient age
14) Fetal size
15) Cervical dilatation
16) Cervical effacement
17) Contraction stress test
18) Fetal ultrasound
19) CT scan
20) Ultrasound

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