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VALIDATION OF THE RUSSIAN AND KAZAKH VERSIONS OF THE PSQ-18: ADAPTED INSTRUMENT FOR PREGNANT WOMEN WITH GESTATIONAL DIABETES MELLITUS

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Abstract

Background: Gestational diabetes mellitus (GDM) is a growing public health concern associated with adverse maternal and neonatal outcomes. Patient satisfaction represents an essential indicator of quality of care, particularly within primary healthcare settings responsible for screening, diagnosis, and follow-up of GDM. The Patient Satisfaction Questionnaire-18 (PSQ-18) is widely used internationally; however, no validated Kazakh or Russian versions tailored for pregnant women with GDM previously existed.

Aim: To adapt and validate the PSQ-18 for use among pregnant women with GDM in Kazakhstan.

Methods: A cross-sectional study was conducted. Forward–backward translation, expert review, and cultural adaptation processes were performed for Kazakh and Russian versions. The questionnaire was pilot-tested among 100 pregnant women with GDM (50 for each language version) in outpatient clinics in Aktobe. Internal consistency was assessed using Cronbach's alpha.

Results: Minor linguistic and conceptual adjustments were introduced to improve clarity and cultural relevance. Cronbach's alpha demonstrated acceptable internal consistency for both versions: 0.821 (Russian) and 0.758 (Kazakh). Pilot results confirmed comprehensibility and usability of the adapted tool in routine antenatal care settings.

Conclusion: The Kazakh and Russian versions of the PSQ-18 are reliable and culturally appropriate instruments for evaluating patient satisfaction among pregnant women with GDM in Kazakhstan's outpatient settings. Their use may support quality improvement and patient-centered care initiatives in primary healthcare.

Keywords: *questionnaire, validation, gestational diabetes mellitus, primary healthcare, satisfaction.*

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Резюме

ВАЛИДАЦИЯ РУССКОЙ И КАЗАХСКОЙ ВЕРСИЙ PSQ-18: АДАПТИРОВАННЫЙ ИНСТРУМЕНТ ДЛЯ БЕРЕМЕННЫХ ЖЕНЩИН С ГЕСТАЦИОННЫМ САХАРНЫМ ДИАБЕТОМ

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Актуальность: Гестационный сахарный диабет (ГСД) является актуальной проблемой общественного здравоохранения и связан с неблагоприятными материнскими и перинатальными исходами. Удовлетворённость пациентов является важным индикатором качества медицинской помощи, особенно на уровне первичной медико-санитарной помощи, где осуществляются скрининг, диагностика и наблюдение беременных с ГСД. Опросник удовлетворённости пациентов PSQ-18 широко используется в международных исследованиях, однако до настоящего времени не существовало валидированных казахской и русской версий для беременных с ГСД.

Цель: Адаптировать и валидировать опросник PSQ-18 для беременных женщин с ГСД в Казахстане.

Методы: Проведено поперечное исследование. Выполнены прямой и обратный перевод, экспертная оценка и культурная адаптация казахской и русской версий опросника. Пилотирование проведено среди 100 беременных женщин с ГСД (50 — русская версия, 50 — казахская) в амбулаторных организациях здравоохранения г. Актобе. Внутренняя согласованность оценивалась с использованием коэффициента альфа Кронбаха.

Результаты: В анкету внесены незначительные лингвистические и концептуальные корректировки для повышения ясности и культурной релевантности. Значения альфа Кронбаха составили 0,821 для русской версии и 0,758 для казахской, что свидетельствует о приемлемой внутренней согласованности. Пилотирование подтвердило понятность и применимость инструмента в условиях амбулаторной акушерской помощи.

Заключение: Казахская и русская версии PSQ-18 являются надёжными и культурно адаптированными инструментами для оценки удовлетворённости медицинской помощью среди беременных женщин с ГСД в амбулаторных условиях Казахстана. Использование данного инструмента позволит поддержать процессы улучшения качества и пациент-ориентированности на уровне ПМСП.

Ключевые слова: *анкета, валидация, гестационный сахарный диабет, первичная медико-санитарная помощь, удовлетворённость.*

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Түйіндеме

PSQ-18 САУАЛНАМАСЫНЫҢ ҚАЗАҚ ЖӘНЕ ОРЫС ТІЛДЕРІНДЕГІ НҰСҚАЛАРЫН ВАЛИДИЗАЦИЯЛАУ: ГЕСТАЦИЯЛЫҚ ҚАНТ ДИАБЕТІ БАР ЖҮКТІ ӘЙЕЛДЕРГЕ БЕЙІМДЕЛГЕН ҚҰРАЛ

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Өзектілігі: Гестациялық қант диабеті (ГҚД) – ана мен нәресте денсаулығына кері әсер ететін өзекті қоғамдық денсаулық сақтау мәселесі. Пациенттердің қанағаттануы медициналық көмектің сапасының маңызды көрсеткіші болып табылады, әсіресе ГҚД бар жүкті әйелдерді скринингтеу, диагностикалау және бақылауды жүзеге асыратын алғашқы медициналық-санитариялық көмек (АМСК) деңгейінде. PSQ-18 науқастардың қанағаттануын бағалау сауалнамасы халықаралық зерттеулерде кеңінен қолданылады, алайда осы уақытқа дейін ГҚД бар жүкті әйелдер үшін бейімделген және валидтелген қазақ және орыс нұсқалары болмаған.

Мақсаты: Қазақстандағы ГҚД бар жүкті әйелдер арасында PSQ-18 сауалнамасының қазақ және орыс тіліндегі нұсқаларын бейімдеу және валидтеу.

Әдістер: Көлденең зерттеу жүргізілді. Сауалнама қазақ және орыс тілдеріне тікелей және кері аударылып, сараптамалық бағалау мен мәдени бейімдеу жүргізілді. Пилоттық сынақ Актөбе қаласындағы амбулаториялық ұйымдарда ГҚД диагнозы бар 100 жүкті әйел арасында (50 — орысша, 50 — қазақша нұсқа) жүргізілді. Ішкі сәйкестігі Кронбах альфа коэффициенті арқылы бағаланды.

Нәтижелер: Сауалнама элементтерінің түсініктілігін арттыру үшін неғұрлым айқын және мәдени тұрғыдан сәйкес тұжырымдарға түзетулер енгізілді. Кронбах альфа коэффициенті орыс нұсқасы үшін 0,821 және қазақ нұсқасы үшін 0,758 құрады, бұл шкалалардың жеткілікті ішкі сәйкестігіне дәлел. Пилоттық зерттеу сауалнаманың амбулаториялық акушерлік көмек жағдайында қолдануға қолайлы және түсінікті екенін көрсетті.

Қорытынды: PSQ-18 сауалнамасының қазақ және орыс тілдеріндегі нұсқалары ГҚД бар жүкті әйелдердің медициналық көмекке қанағаттануын бағалауға арналған сенімді және мәдени тұрғыдан бейімделген құрал болып табылады. Бұл құралды пайдалану АМСК деңгейінде пациентке бағдарланған көмекті және медициналық қызмет сапасын жақсарту бастамаларын қолдауға мүмкіндік береді.

Түйінді сөздер*: сауалнама, валидизация, гестациялық қант диабеті, алғашқы медициналық-санитариялық көмек, қанағаттану.*

Дәйексөз үшін:

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Introduction

Gestational diabetes mellitus (GDM) is a disorder of carbohydrate metabolism first identified during pregnancy, which has gained increasing attention in global healthcare in recent years due to its rising prevalence [1]. According to the International Diabetes Federation (IDF), the global prevalence of GDM is approximately 16.7% [2]. The prevalence of GDM is predominantly observed in low- and middle-income countries [3]. GDM is associated with an increased risk of maternal complications, including preeclampsia, cesarean delivery, and the subsequent development of type 2 diabetes, as well as adverse perinatal outcomes such as macrosomia, neonatal hypoglycemia, and respiratory distress [4-6]. The growing burden of GDM is driven by a combination of factors, among which advanced maternal age, urbanization, changes in dietary patterns, and reduced physical activity play a major role [7-10].

Primary healthcare (PHC) plays a crucial role in the healthcare system and serves as the first point of contact for pregnant women [11]. PHC performs key functions in managing GDM: organizing screening and early diagnosis, ensuring referral to specialized professionals and laboratories, and providing continuous monitoring, education, and support throughout pregnancy [12]. Effective management of GDM largely depends on the degree of patient engagement, the quality of communication with healthcare professionals, access to specialized care, and the level of satisfaction with received services. Patient satisfaction is widely recognized as a key indicator of healthcare quality and a predictor of treatment adherence, compliance with recommendations, and maintenance of therapeutic regimens.

This study involved the adaptation and pilot testing of the Patient Satisfaction Questionnaire-Short Form (PSQ-18) in Kazakh and Russian among pregnant women with GDM receiving outpatient care. PSQ-18 is a brief version of the classic PSQ-III developed by RAND Health Care, covering seven domains of patient satisfaction. The tool is widely used in international research on the quality of outpatient care and patient-centeredness, includes standardized scoring, and is available in open access along with scoring instructions on the official RAND website [13].

Despite the rising prevalence of GDM in the Republic of Kazakhstan and the need to strengthen outpatient management for affected pregnant women, research assessing patient satisfaction with healthcare services remains limited. Existing international satisfaction assessment tools require adaptation to the national context and evaluation of their psychometric properties in the target population. The aim of this study was to assess the clarity, cultural relevance, and reliability of the instrument, enabling its further use for monitoring healthcare quality and guiding improvement initiatives.

Materials and Methods

Study design: cross-sectional study. Quantitative, statistical, and analytical research methods were used.

Stage 1. Questionnaire development.

The “Patient Satisfaction Questionnaire, Short Form (PSQ-18),” which is publicly available, was used as the primary instrument. Since the questionnaire covers general satisfaction with medical care, the items were adapted for pregnant women with gestational diabetes mellitus to ensure clearer understanding of the context and research objectives.

The questionnaire consists of 18 items, divided into seven subscales: General Satisfaction (items 3 and 17); Technical Quality (items 2, 4, 6, and 14); Interpersonal Manner (items 10 and 11); Communication (items 1 and 13); Financial Aspects (items 5 and 7); Time Spent with Doctor (items 12 and 15); and Accessibility and Convenience (items 8, 9, 16, and 18). Some PSQ-18 items are phrased such that agreement indicates satisfaction with medical care, whereas in others agreement indicates dissatisfaction. All items must therefore be reverse-coded where appropriate so that higher scores consistently reflect higher satisfaction. After recoding, items within each subscale are averaged to obtain seven final scale scores.

Responses are rated on a five-point Likert scale: “strongly agree,” “agree,” “uncertain,” “disagree,” “strongly disagree”.

The instrument was prepared using a forward- and back-translation methodology [14]. First, two independent qualified translators translated the questionnaire from English into Kazakh and Russian. Then, reverse translations into English were performed by independent translators who were unaware of the original version. The resulting versions were reviewed by experts proficient in English, Kazakh, and Russian.

Next, translations were discussed with the research team to verify their accuracy and equivalence to the original English instrument. Necessary modifications were introduced to ensure semantic adequacy. For example, in the Russian version of item 1 (“Doctors are good about explaining the reason for medical tests”), the broader term “medical examinations” was used instead of the narrower “medical tests”. In Russian practice, the term “medical tests” typically refers only to laboratory analyses and excludes instrumental/functional studies, imaging procedures, and physical examinations. The broader wording preserves conceptual scope and maintains content validity and comparability with the original PSQ-18. In the Kazakh version, the term “medical examinations” was used for the same purpose.

In the Russian version, all statements and Likert-scale anchors were deliberately written in the feminine form (e.g., “agree”, “disagree”, “strongly disagree”) because the target sample consisted of pregnant women. This linguistic decision aimed to improve readability and reduce cognitive burden while preserving the constructs, polarity of items, and scoring scheme, including reverse-coded items.

Stage 2. Pilot testing.

A pilot survey was conducted among pregnant women diagnosed with gestational diabetes mellitus. The sample included 50 respondents for the Russian version and 50 respondents for the Kazakh version. Each participant received an informed consent form and study information sheet describing the study title, purpose, procedures, expected benefits, confidentiality, and researcher contact details. Surveys were administered in urban outpatient clinics in Aktobe before or after consultations with obstetrician-gynecologists, without disrupting clinical workflow. Participation was anonymous, voluntary, and followed the signing of informed consent.

The objectives of this phase were to assess the clarity of questionnaire items, identify translation discrepancies, correct them, and refine wording. Based on pilot results, translation errors were corrected and necessary adjustments were introduced. Questionnaire reliability was assessed using internal consistency, calculated by Cronbach’s alpha. An alpha coefficient above 0.7 is considered acceptable and indicates good internal consistency [14].

This study was approved by the Bioethics Committee of the West Kazakhstan Marat Ospanov Medical University (Protocol No. 5, June 5, 2025).

Results

A total of 50 respondents participated in the pilot study for each language version of the questionnaire (Kazakh and Russian). Based on the results of preliminary testing, minor clarifications were introduced into the wording of several items and response options to enhance clarity for the target population.

The internal consistency of the instrument was evaluated using Cronbach’s alpha for all thematic subscales. The obtained Cronbach’s alpha values were 0.821 for the Russian version (Table 1) and 0.758 for the Kazakh version (Table 2), indicating an acceptable level of internal consistency across scales.

Table 1.

Cronbach’s Alpha reliability results (Russian version).

№	Item wording	Mean	SD	Corrected item–total correlation	Cronbach’s alpha if item deleted
1	2	3	4	5	6
1	Doctors are good about explaining the reason for medical examinations related to my GDM.	3,00	1,370	0,329	0,816
2	I think my doctor’s office has everything needed to provide complete medical care for pregnant women with GDM.	3,02	1,421	0,397	0,813
3	The medical care I have been receiving for my GDM is just about perfect.	3,02	1,378	0,134	0,827
4	Sometimes doctors make me wonder if their diagnosis of GDM is correct.	2,88	1,365	0,584	0,802
5	I feel confident that I can get the medical care I need for my GDM without being set back financially.	3,10	1,403	0,398	0,813
6	When I go for medical care for my GDM, they are careful to check everything when treating and examining me.	3,12	1,394	0,591	0,801
7	I have to pay for more of my medical care for GDM than I can afford.	3,10	1,460	0,409	0,812
8	I have easy access to the medical specialist I need for my GDM.	3,08	1,397	0,639	0,799
9	Where I get medical care for my GDM, people have to wait too long for emergency treatment.	2,92	1,426	0,591	0,801
10	Doctors act too businesslike and impersonal toward me when providing care related to my GDM.	3,06	1,346	0,422	0,811

Continuation of Table 1.

1	2	3	4	5	6
11	My doctors treat me in a very friendly and courteous manner when caring for me during my pregnancy with GDM.	3,06	1,346	0,347	0,815
12	Those who provide my medical care for GDM sometimes hurry too much when they treat me.	2,96	1,370	0,455	0,809
13	Doctors sometimes ignore what I tell them about my GDM.	2,80	1,471	0,290	0,819
14	I have some doubts about the ability of the doctors who treat me for my GDM.	2,98	1,378	0,194	0,824
15	Doctors usually spend plenty of time with me when managing my GDM.	3,00	1,471	0,270	0,820
16	I find it hard to get an appointment for medical care for my GDM right away.	3,04	1,277	0,329	0,816
17	I am dissatisfied with some things about the medical care I receive for my GDM.	2,94	1,391	0,397	0,813
18	I am able to get medical care for my GDM whenever I need it.	3,04	1,293	0,134	0,827

Table 2.

Cronbach's Alpha reliability results (Kazakh version).

№	Item wording	Mean	SD	Corrected item–total correlation	Cronbach's alpha if item deleted
1	Doctors are good about explaining the reason for medical examinations related to my GDM.	3,04	1,442	,469	,736
2	I think my doctor's office has everything needed to provide complete medical care for pregnant women with GDM.	3,02	1,421	,286	,751
3	The medical care I have been receiving for my GDM is just about perfect.	3,08	1,291	,278	,751
4	Sometimes doctors make me wonder if their diagnosis of GDM is correct.	3,02	1,407	,429	,739
5	I feel confident that I can get the medical care I need for my GDM without being set back financially.	3,08	1,275	,424	,740
6	When I go for medical care for my GDM, they are careful to check everything when treating and examining me.	3,04	1,442	,348	,746
7	I have to pay for more of my medical care for GDM than I can afford.	2,96	1,525	,183	,760
8	I have easy access to the medical specialist I need for my GDM.	3,10	1,374	,378	,744
9	Where I get medical care for my GDM, people have to wait too long for emergency treatment.	2,96	1,456	,168	,761
10	Doctors act too businesslike and impersonal toward me when providing care related to my GDM.	2,96	1,399	,316	,749
11	My doctors treat me in a very friendly and courteous manner when caring for me during my pregnancy with GDM.	2,92	1,322	,090	,765
12	Those who provide my medical care for GDM sometimes hurry too much when they treat me.	3,02	1,421	,448	,738
13	Doctors sometimes ignore what I tell them about my GDM.	2,96	1,414	,341	,746
14	I have some doubts about the ability of the doctors who treat me for my GDM.	3,00	1,400	,345	,746
15	Doctors usually spend plenty of time with me when managing my GDM.	2,98	1,270	,469	,736
16	I find it hard to get an appointment for medical care for my GDM right away.	2,96	1,324	,286	,751
17	I am dissatisfied with some things about the medical care I receive for my GDM.	3,04	1,309	,278	,751
18	I am able to get medical care for my GDM whenever I need it.	3,04	1,428	,429	,739

Discussion

The results demonstrate that the adapted PSQ-18 is a valid instrument for assessing satisfaction with healthcare services among pregnant women with gestational diabetes mellitus receiving outpatient care in Kazakhstan. The forward–backward translation procedure, expert review, and pilot testing ensured cultural and linguistic equivalence, while the adjustments introduced improved terminology accuracy and naturalness of phrasing.

High Cronbach's alpha values for the Russian (0.821) and Kazakh (0.758) versions indicate good internal consistency of the scales and are comparable to the performance of the original instrument. Minor revisions made after the pilot phase improved item clarity without altering the scale structure or content.

The findings align with international experience using the PSQ-18 across diverse healthcare domains and countries. The instrument has been adapted and applied in Spain (dermatology) [15], Ethiopia (ophthalmology) [16], Indonesia (dentistry) [17], as well as in Malaysia and the United States for assessing satisfaction with prenatal counseling and antenatal care [18,19]. Our procedures for translation, expert evaluation, and pilot administration follow the ISPOR "Principles of Good Practice" for translation and cultural adaptation of PRO instruments [20], ensuring comparability with global research.

Thus, the adapted PSQ-18 can serve as a reliable instrument for monitoring the quality of outpatient care for pregnant women with GDM and for informing strategies aimed at strengthening patient-centeredness and healthcare effectiveness.

Conclusion

The adapted Kazakh and Russian versions of the PSQ-18 demonstrated sufficient clarity for the target population, and the linguistic modifications ensured cultural and terminological accuracy. The internal consistency indicators obtained (α = 0.821 for the Russian version and α = 0.758 for the Kazakh version) confirm the reliability of the scales and compliance with methodological requirements for instruments measuring patient satisfaction with healthcare services.

The adapted PSQ-18 may be used to evaluate the quality of outpatient care for pregnant women with gestational diabetes mellitus and can serve as a foundation for further implementation of patient-centered monitoring tools in Kazakhstan's primary healthcare system.

Ethical approval and consent to participate. *This study was approved by the Ethics committee of West Kazakhstan Marat Ospanov Medical University (Protocol no. 5 from June 5, 2025). All participants provided written informed consent before conducting the interviews.*

Availability of data and materials. *Original data can be provided by West Kazakhstan Marat Ospanov Medical University upon reasonable request.*

Conflict of interest. *The authors declare that there is no conflict of interest.*

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