

# Psychometric Properties of the Persian Version of the Social Determinants of Health Questionnaire in Patients Undergoing Hemodialysis

**Gholamreza Abdoli**

Kermanshah University of Medical Sciences

**Fatemeh Heydarpour**

Kermanshah University of Medical Sciences

**Yahya Salimi**

Kermanshah University of Medical Sciences

**Abouzar Raeisvandi**

Qazvin University of Medical Sciences

**Hanieh Moradi**

**`h.moradi7165@gmail.com`**

Kermanshah University of Medical Sciences

---

## Short Report

**Keywords:** Social determinants of health, Hemodialysis, Questionnaire, Validity, Reliability, Iran

**Posted Date:** August 4th, 2026

**DOI:** <https://doi.org/10.21203/rs.3.rs-9861330/v1>

**License:**   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

**Additional Declarations:** No competing interests reported.

---

# Abstract

## Background

Social determinants of health significantly influence hemodialysis patients; yet culturally adapted assessment tools are limited in Iran. This study evaluated the psychometric properties of the Persian version of the Steps to Better Health Questionnaire in hemodialysis patients.

## Methods

A cross-sectional study was conducted in 2024 using a census approach across all nine dialysis centers in Qazvin Province. The 16-item STBH-Q, assessing five SDH domains, was translated using the Forward-Backward method. Validity was assessed through face, content, discriminant, and construct analyses, and reliability via test-retest with Intraclass Correlation Coefficient. Statistical analyses were performed using STATA version 17.

## Results

The study included 435 hemodialysis patients with a 98% participation rate. The Persian STBH-Q demonstrated strong validity, with Impact Scores  $> 1.5$  for face validity,  $CVR \geq 0.75$ ,  $CVI > 0.79$  per item, and total CVI of 0.94 for content validity. Discriminant and construct validity were confirmed through significant item-domain correlations and subgroup differences ( $P < 0.001$ ), respectively. Reliability was high, with domain ICC 0.82–0.94 and total ICC 0.94 ( $P < 0.001$ ).

## Conclusion

The Persian STBH-Q is a valid and reliable tool for assessing SDH in Iranian hemodialysis patients, facilitating targeted interventions and informing health policy. Further studies in other Iranian regions are recommended to enhance generalizability.

## Introduction

Social Determinants of Health (SDH) is characterized as the settings in which people were born, grew up, lived, worked, and aged, which shaped their physical, mental, and social health (1). These factors include access to medical services, socioeconomic support, educational achievement, housing conditions, environment, healthy behaviors, social assistance, and experiences in childhood are considered primary predictors of health outcomes (1, 2). Their role becomes critical in patients with chronic diseases, especially in those undergoing hemodialysis because of socio-medical conditions and disease burden along with their impact on patient's quality of life (3, 4). These patients endure many challenges such as

physical limitations, dependence on healthcare infrastructure, psychological stress due to prolonged treatment, and the indirect and direct costs of treatment (5, 6, 7, 8).

In Iran, despite the availability of hemodialysis services in public and private centers, patients still face obstacles like inequitable transport access (9), limited social support (10), and economic hardships (11) that negatively impact their quality of life and adherence to treatment (12). The World Health Organization (WHO) has pointed out that these factors need to be evaluated and dealt with in order to close the unequal gaps in healthcare (13). Therefore, it is important to design reliable and feasible instruments tailored to identify the health's patients' social needs, allowing healthcare professionals to appropriately refer them to the relevant aid services such as social work or counseling (14, 15). Nonetheless, many validated and localized instruments already available either focus on specific domains, or are overly complicated and lengthy for fast-paced clinical environments (16) which impedes the individual level assessment and screening of these factors within clinical care settings (17).

The "Steps to Better Health Questionnaire (STBH-Q)," designed by Oster et al. in 2023 in Australia, is a self-report tool with 16 questions that covers a wide range of these factors and demonstrates good validity and reliability (18). Although this questionnaire has been validated in Australia (18) and Peru (19), cultural, social, and healthcare system differences in Iran necessitate its adaptation for hemodialysis patients. Qazvin Province, located in northwestern Iran, with a population of approximately 1.4 million and nine active dialysis centers, was selected for this study. The aim of this study was to translate, adapt, and evaluate the psychometric properties of the Persian version of the STBH-Q among all hemodialysis patients in the province to provide a valid and contextually appropriate tool for these patients in Iran. This research can lay the foundation for broader use of this adapted tool in clinical settings, supporting the design of targeted interventions, treatment-support policies, and ultimately improving the quality of life for these patients in Iran.

## Methods

### Study Design and Participants

The cross-sectional study was conducted in 2024 by employing a census approach on all 9 dialysis centers located in the counties of Qazvin Province, including Qazvin, Alborz, Abyek, Takestan, Buin Zahra, and Avaj. The study was conducted following approval from the Ethics Committee of Kermanshah University of Medical Sciences (Code: IR.KUMS.REC.1403.204) alongside the required coordination with Qazvin University of Medical Sciences. All patients who commenced hemodialysis treatment by the end of 2023 formed the target population of the study.

As per the Iranian statistical center, Qazvin province is home to approximately 1.4 million people out of which 50.9% are male and 79.8% are urban dwellers. This demographic mix mirrors the national averages (50.5% males and 77% urban residents), which makes the area suitable to conduct this study (20).

Participants needed to be able to read and write or comprehend questions with help from a trained researcher and had to give informed consent. Those with serious cognitive impairments (as determined by their doctor or through research evaluations) or unstable medical conditions (such as being in intensive care during the study) were excluded.

As of the end of 2023, 444 patients were a participant of hemodialysis, with 8 declining to participate, and 1 participant was excluded due to admission to Intensive Care Unit (Participation rate = 98%). The sample size of 435 was far larger than the minimum needed for psychometric analyses. Considering the recommendation of rule of 10 to 15 (21), a minimum of 160 to 240 samples was acceptable for the 16 item STBH-Q. The census method not only met this sampling expectation but also afforded a more accurate analysis and less sampling bias.

Data collection was done by five trained researchers who were experienced in interviewing hemodialysis patients, applying self-report measures, and adhering to ethical standards. For patients unable to reply independently due to exhaustion, vision loss, or other physical limitations, the questionnaire was read to them with the assistance of a companion. Prior to commencement, the study aims, confidentiality of data, and voluntariness of participation were clarified in detail. The questionnaire was administered after one hour of hemodialysis to minimize the impact of dialysis-induced stress or fatigue. The time taken to complete the questionnaire was 10 to 15 minutes, which was deemed appropriate considering the patients' condition.

## **Data Collection Tool**

The "Steps to Better Health Questionnaire (STBH-Q)" contains 16 questions developed by Oster et al. (2023) (18). The questions are rated on a 9-point scale (0 to 8), where lower scores represent a higher need for support in that area. The questionnaire asked about five general areas: Access (6 questions), Employment, Financial status, and Education (3 questions); Safety (2 questions); Physical and Mental health (3 questions); and Family and Childhood (2 questions).

## **Translation and Adaptation Process**

The STBH-Q was translated into Persian following international standards using the Forward-Backward Translation method. In the first stage, two independent translators translated the questionnaire into Persian. The research team reviewed both translations and prepared a preliminary Persian version. This version was back-translated into English by an English language expert and compared with the original, resulting in the final Persian version.

## **Questionnaire Validity**

Validity of the questionnaire was established by four methods: face validity, content validity, discriminant validity, and construct validity.

To assess the qualitative face validity, interviews were conducted with 10 dialysis patients and experts to analyze the difficulty level, suitability, and ambiguity of the phrases and words used within the questionnaire. Feedback was taken carefully, and amendments were made as and when necessary. To assess the quantitative face validity, the Impact Score method was utilized. One item was rated on a 5-point Likert scale (1 = not important at all, 5 = very important). Opinions of 10 subject matter experts were utilized to eliminate or reduce irrelevant items and choose their relevance. Items with an Impact Score of 1.5 and higher were retained. Impact scores were calculated as frequency (the percentage of experts who rated the item as 4 or 5) multiplied by the average important score from the Likert scale.

For content validity, the questionnaire was evaluated qualitatively and quantitatively. In the qualitative stage, five professors with expertise in questionnaire design reviewed aspects such as Persian language accuracy, appropriate word choice, item placement, and completion time, suggesting necessary revisions. In the quantitative stage, Content Validity Ratio (CVR) and Content Validity Index (CVI) were used to assess item relevance and importance. For CVR, eight specialists from fields including health education, epidemiology, sociology, social medicine, and nephrology evaluated each item's necessity. Based on Lawshe's table (22) and with eight evaluators, items with a CVR of 0.75 or higher were considered significant and retained.

CVI was quantified by employing the Waltz and Bausell approach (23) via eight experts and professors. They answered on a 4-point Likert scale about the appropriateness, clarity, and simplicity of each item. The CVI for each item was calculated by dividing the number of experts who scored a 3 or 4 by the number of experts. Hyrkäs et al. suggest a minimum CVI of 0.79 for item acceptance (24). The average CVI scores for all items (Ave/CVI-S) were calculated as the overall content validity index, with Polit and Beck recommending a minimum of 0.90 for acceptance (25).

Discriminant validity was assessed by calculating Spearman's correlation coefficient between each item and its related domain, as well as other domains. For construct validity, the known-groups comparison method was used to evaluate the questionnaire's ability to differentiate between subgroups, with marital status and employment status used as parameters for subgroup formation.

## **Questionnaire Reliability**

Reliability was assessed using the test-retest method. The questionnaire was completed by 25 dialysis patients twice, with a two-week interval, and the scores from both stages were compared.

## **Statistical Analysis**

Quantitative data were described as mean (standard deviation), and qualitative data as frequency (percentage). For construct validity, known-groups comparisons were conducted using one-way ANOVA.

Reliability was evaluated by calculating the Intraclass Correlation Coefficient (ICC) for the entire questionnaire and its domains, with a threshold of 0.7 considered acceptable (26).

Following Oster et al. (18), for item 5 regarding harmful habits, responses indicating “no harmful habits” were equated to “not at all worried” and assigned a score of 8. Data analysis was performed using STATA version 17.

## Results

### Characteristics of Study Population:

The average (standard deviation) age of the study participants was 54.52 (16) years. Most study participants were male (57.24%), in the age range of 60–70 (28.28%), and had permanent catheter vascular access (51.72%) (Table 1).

| Table 1<br>Distribution of Age, Gender, and Vascular Access of Patients (N = 435) |                       |           |                |
|-----------------------------------------------------------------------------------|-----------------------|-----------|----------------|
| Variable                                                                          | Categories            | Frequency | Percentage (%) |
| Age (years)                                                                       | < 30                  | 40        | 9.20           |
|                                                                                   | 30–40                 | 54        | 12.41          |
|                                                                                   | 40–50                 | 52        | 11.95          |
|                                                                                   | 50–60                 | 96        | 22.07          |
|                                                                                   | 60–70                 | 123       | 28.28          |
|                                                                                   | > 70                  | 70        | 16.09          |
| Gender                                                                            | Male                  | 249       | 57.24          |
|                                                                                   | Female                | 186       | 42.76          |
| Vascular Access                                                                   | Temporary Catheter    | 21        | 4.83           |
|                                                                                   | Permanent Catheter    | 225       | 51.72          |
|                                                                                   | Arteriovenous Fistula | 182       | 41.84          |
|                                                                                   | Synthetic Graft       | 7         | 1.61           |

Table 1

### Questionnaire Validity:

In the face validity analysis, all questionnaire items received an Impact Score of larger than 1.5, indicating the items, as rated by the experts’, were of sufficient importance relevancy. In terms of content validity, Content Validity Ratio (CVR) was larger than or equal to 0.75 for all items, which is considered

satisfactory based on Lawshe's criteria with 8 experts on the research panel. For the Content Validity Index (CVI), all items were larger than 0.79 and the averaged CVI for the entire questionnaire was calculated to be 0.94 suggesting favorable content validity of the tool used (Table 2).

Table 2  
Face and Content Validity of the Questionnaire

| Item Number | Items                                   | CVR  | CVI  | Impact Score | Mean (SD)      |
|-------------|-----------------------------------------|------|------|--------------|----------------|
| 1           | Family connections                      | 1    | 0.92 | 3.44         | 6.51<br>(1.81) |
| 2           | Satisfaction with employment/retirement | 1    | 1    | 2.87         | 3.17<br>(2.56) |
| 3           | Satisfaction with education             | 1    | 0.92 | 3.36         | 3.26<br>(2.49) |
| 4           | Satisfaction with finances              | 1    | 0.92 | 2.73         | 3.22<br>(2.35) |
| 5           | Concern about harmful habits/addictions | 0.75 | 0.92 | 1.8          | 7.23<br>(1.87) |
| 6           | Access to healthy food                  | 1    | 0.96 | 2.28         | 5.26<br>(2.32) |
| 7           | Access to transportation                | 1    | 0.92 | 1.85         | 5.52<br>(2.45) |
| 8           | Access to suitable housing              | 1    | 0.92 | 3.28         | 6.63<br>(1.83) |
| 9           | Concern about mental health             | 0.75 | 0.96 | 1.65         | 4.53<br>(2.59) |
| 10          | Concern about physical health           | 0.75 | 1    | 1.7          | 2.79<br>(2.51) |
| 11          | Access to recreational spaces           | 1    | 0.92 | 1.7          | 3.31<br>(2.62) |
| 12          | Concern about home safety               | 0.75 | 0.96 | 1.75         | 6.72<br>(1.82) |
| 13          | Concern about community safety          | 0.75 | 1    | 1.8          | 6.19<br>(2.02) |
| 14          | Access to legal assistance              | 1    | 0.92 | 2.1          | 2.81<br>(2.62) |
| 15          | Satisfaction with childhood             | 1    | 0.92 | 2.28         | 5.45<br>(2.91) |
| 16          | Access to healthcare services           | 1    | 0.92 | 2.73         | 5.68<br>(2.10) |
|             | Critical Threshold                      | 0.75 | 0.79 | 1.5          | -              |

Table 2

In terms of discriminant validity, Spearman's correlation coefficient was calculated for each item with the own domain and other domains. While all of the items had larger and significant correlations with their own domains ( $P < 0.05$ ). The item-domain correlation coefficients were: Access (0.54–0.76), Employment, Financial Status, and Education (0.65–0.80), Safety (0.78–0.90), Physical and Mental Health (0.2–0.78), and Family and Childhood (0.61–0.85) (Table 3).

Table 3  
Spearman's Correlation Coefficients of Items with Their Own and Other Domains

| Item Number | Own Domain                       | Domains |                                  |        |                          |                    |
|-------------|----------------------------------|---------|----------------------------------|--------|--------------------------|--------------------|
|             |                                  | Access  | Employment, Financial, Education | Safety | Physical & Mental Health | Family & Childhood |
| 6           | Access                           | 0.73*   | 0.49*                            | 0.34*  | 0.24*                    | 0.24*              |
| 7           |                                  | 0.76*   | 0.38*                            | 0.24*  | 0.20*                    | 0.24*              |
| 8           |                                  | 0.54*   | 0.27*                            | 0.26*  | 0.19*                    | 0.19*              |
| 11          |                                  | 0.66*   | 0.29*                            | 0.23*  | 0.34*                    | 0.21*              |
| 14          |                                  | 0.65*   | 0.34*                            | 0.09*  | 0.17*                    | 0.15*              |
| 16          |                                  | 0.65*   | .34*                             | 0.25*  | 0.14*                    | 0.32*              |
| 2           | Employment, Financial, Education | 0.40*   | 0.80*                            | 0.23*  | 0.24*                    | 0.26*              |
| 3           |                                  | 0.25*   | 0.65*                            | 0.16*  | 0.12*                    | 0.12*              |
| 4           |                                  | 0.51*   | 0.76*                            | 0.23*  | 0.31*                    | 0.11*              |
| 12          | Safety                           | 0.37*   | 0.28*                            | 0.78*  | 0.15*                    | 0.24*              |
| 13          |                                  | 0.24*   | 0.21*                            | 0.90*  | 0.14*                    | 0.12*              |
| 5           | Physical & Mental Health         | -0.03   | -0.02                            | -0.02  | 0.20*                    | 0.03               |
| 9           |                                  | 0.27*   | 0.19*                            | 0.20*  | 0.78*                    | 0.19*              |
| 10          |                                  | 0.30*   | 0.32*                            | 0.10*  | 0.76*                    | 0.09               |
| 1           | Family & Childhood               | 0.39*   | 0.24*                            | 0.25*  | 0.20*                    | 0.61*              |
| 15          |                                  | 0.16*   | 0.15*                            | 0.08   | 0.10*                    | 0.85*              |
| *P < 0.05   |                                  |         |                                  |        |                          |                    |

Table 3

Construct validity was determined by computing significant differences for mean scores across demographic subgroups. ANOVA results indicated there were significant differences for mean

questionnaire scores based on respective marital status (married, unmarried, widowed/divorced) ( $P < 0.001$ )(Table 4). The average score for unmarried was the highest (82.12 [20.08]), while mean questionnaires score for widowed/divorced was scored lowest (66.66 [16.35]). ANOVA also showed there were significant differences for mean questionnaire scores across occupational groups (employed, unemployed, homemaker, retired) ( $P < 0.001$ ). Mean questionnaire score for employed was the highest (84.05 [18.80]), and the unemployed group scored the lowest (73.96 [18.77]) (Table 4).

Table 4  
Mean Questionnaire Scores Comparison by Marital and Occupational Status (N = 435)

| Variable       | Categories       | Frequency | Mean (SD)     | P-value     |
|----------------|------------------|-----------|---------------|-------------|
| Marital Status | Married          | 341       | 79.34 (17.78) | $P < 0.001$ |
|                | Single           | 49        | 82.12 (20.08) |             |
|                | Widowed/Divorced | 45        | 66.66 (16.35) |             |
| Occupation     | Employed         | 104       | 84.05 (18.80) | $P < 0.001$ |
|                | Unemployed       | 56        | 73.96 (18.77) |             |
|                | Homemaker        | 163       | 74.34 (17.66) |             |
|                | Retired          | 112       | 81.05 (16.85) |             |

Table 4

## Questionnaire Reliability:

The questionnaire's reliability was examined using the Intraclass Correlation Coefficient (ICC) for the 16 items over five domains. The ICCs ranged from 0.82 to 0.94 at the domain level, and an overall ICC of 0.94 for the entire questionnaire, indicating good to excellent reliability per standard criteria of reliability. All ICC coefficients were statistically significant ( $P < 0.001$ ), and indicate that there is high stability and reliability of the questionnaire's measures (see Table 5).

Table 5  
Intraclass Correlation Coefficient (ICC) by Domains and Overall Questionnaire

| Domain                           | Item Number         | Mean (SD)     | ICC  | 95% Confidence Interval |             | P-value   |
|----------------------------------|---------------------|---------------|------|-------------------------|-------------|-----------|
|                                  |                     |               |      | Lower Bound             | Upper Bound |           |
| Access                           | 6, 7, 8, 11, 14, 16 | 29.24 (9.47)  | 0.94 | 0.87                    | 0.97        | P < 0.001 |
| Employment, Financial, Education | 2, 3, 4             | 9.66 (5.48)   | 0.86 | 0.69                    | 0.94        | P < 0.001 |
| Safety                           | 12, 13              | 12.92 (3.25)  | 0.82 | 0.60                    | 0.92        | P < 0.001 |
| Physical & Mental Health         | 5, 9, 10            | 14.55 (4.56)  | 0.91 | 0.80                    | 0.96        | P < 0.001 |
| Family & Childhood               | 1, 15               | 11.96 (3.63)  | 0.82 | 0.59                    | 0.92        | P < 0.001 |
| Total                            |                     | 78.34 (18.33) | 0.94 | 0.88                    | 0.98        | P < 0.001 |

Table 5

## Discussion

The aim of this study was to assess the psychometric properties of "Steps to Better Health Questionnaire (STBH-Q)" Persian version in hemodialysis patients. The results imply this questionnaire shows good validity and reliability in this patient population. These results consistent with the original study by Oster et al. conducted in Australia (18), and in Canales et al. conducted in Peru (19) to confirm the validity and reliability of STBH-Q in the general population. By focusing on hemodialysis patients, who face unique social and health challenges, our study takes an important step toward localizing and applying this questionnaire in a specific clinical context in Iran.

The evaluation of face and content validity showed that all items of the Persian version of the STBH-Q were relevant, comprehensible, and sufficiently clear and important, making them suitable for use in hemodialysis patients. These indices were not examined in the Oster et al. study (18). In the present study, high scores for Content Validity Ratio ( $CVR \geq 0.75$ ), Content Validity Index ( $CVI \geq 0.79$ ), and the overall CVI of the questionnaire (0.94) indicate that the questionnaire's content aligns well with the conditions and characteristics of this patient group. These results comply with international standards for validating research instruments (22, 24, 25).

Discriminant validity of the tool was confirmed using Spearman's correlation coefficient. Results indicated that all items had a stronger correlation with their own domain than with other domains. This

means there are clear distinctions among the five social determinants of health (SDH) domains and that the tool could successfully, accurately, and separately assess each construct, which is necessary for effective screening of SDH. Despite its low degree of correlation with its own domain and no significant correlation with any of the other domains, we retained item 5 titled “Concern about harmful habits/addictions” as theoretically, it was important. This may be likely attributed to the sensitivity related to addiction and harmful habits in Iranian society (27, 28) which may inhibit the willingness of participants to express concern or concede to any issues. We observed a similar issue with item 5 in the study by Canales et al. (19). Hemodialysis patients, who regularly and for long periods of time, attend treatment centers, may moderate or disguise their responses due to apprehension of being judged negatively, social stigma, or concern it may adversely affect their treatment process.

The tool’s construct validity was confirmed through significant differences in questionnaire scores across groups with different marital status (married, unmarried, widowed/divorced) and employment status (employed, unemployed, homemaker, retired). These findings demonstrate that the STBH-Q can effectively identify differences in patients’ social conditions, aligning with the questionnaire’s primary goal of screening individual social needs (18). In this study, unmarried and employed patients scored higher, possibly due to greater family, social, or economic support, while widowed/divorced and unemployed patients, with lower scores, likely face more limitations (29, 30, 31).

Previous studies have also confirmed the role of family support as a key factor in improving the health of dialysis patients, with emotional and practical family support helping to reduce stress from illness and prolonged treatments and partially offsetting economic pressures (32, 33). Conversely, economic pressures from unemployment or lack of a partner can pose risks for reduced quality of life and increased psychological and social problems in dialysis patients (34, 35, 36). In a study in Peru evaluating the psychometric properties of the STBH-Q, construct validity results showed that widowed/divorced patients and those with lower incomes also scored lower (19).

The reliability of the Persian STBH-Q was confirmed with an intraclass correlation coefficient (ICC) ranging from 0.82 to 0.94 for the domains and 0.94 for the entire questionnaire, indicating high stability over time. However, domains with fewer questions (e.g., “Safety: 2 questions” and “Family and Childhood: 2 questions”) showed lower reliability, an issue also reported in the original study. Oster et al. (2023) suggested adding new questions to these domains (18). In Iran, questions related to family support (due to the prominent role of family in Iranian culture) or perceived safety in healthcare settings could be added.

The STBH-Q has been used in various studies to assess social determinants of health (SDH). For example, a 2024 study in rural Peru examined the relationship between SDH and the prevalence of non-communicable diseases using this questionnaire. The results showed unfavorable SDH among participants, significantly associated with a higher prevalence of non-communicable diseases (37). Another study by Oster et al. explored the relationship between SDH and health-related quality of life in

adults, finding that social activities play a mediating role, with greater participation in social activities reducing the negative effects of social factors (38).

As a relatively short (16 questions) self-report questionnaire, the STBH-Q is feasible for use in time-constrained clinical settings. By covering various SDH domains, it can assist healthcare professionals, including doctors, nurses, and social workers, in identifying patients' social needs and referring them to appropriate support services, such as social work or counseling (39, 40). In Iran, where hemodialysis patients face transportation, financial, and social support challenges, this tool can aid policymakers in designing targeted interventions, such as improving transportation infrastructure or enhancing social services in underserved areas (9, 10, 11, 12).

This study is the first in Iran to evaluate the psychometric properties of an SDH assessment tool in hemodialysis patients through a census in one province. However, it has limitations: it was limited to hemodialysis patients in one province, so caution is needed when generalizing results to other regions. The self-report nature of the tool may be influenced by cultural and social factors. Completing the questionnaire during treatment may introduce response bias due to patients' conditions. Factor analysis was not conducted in this study, though other validity indices were examined and yielded favorable results. Future factor analysis could enhance understanding of the tool's structure. Additionally, the "Safety" and "Family and Childhood" domains, with only two items each, may limit the tool's ability to fully assess these dimensions.

To improve the application of the Persian STBH-Q, broader studies in more diverse populations and different patient groups are recommended. Evaluating the tool's predictive validity in long-term follow-ups and comparing it with similar tools could enhance its accuracy and applicability.

## Conclusion

The Persian version of the STBH-Q is a valid and reliable instrument to assess social determinants of health in hemodialysis patients. Assessing social needs and linking to appropriate services will help play an important role in the provision of care and health policy, in Iran. As there is an increasing demand and need for interventions leveraging social determinants of health, the present study establishes a basis for a wider application of the STBH-Q in Iran. More studies in other regions of Iran will further bolster generalizability.

## Declarations

### **Ethics approval and consent to participate**

This study received approval from the Ethics Committee of Kermanshah University of Medical Sciences (IR.KUMS.REC.1403.204). During the data collection phase, strict adherence to ethical standards concerning participant anonymity and privacy was maintained. Informed consent was obtained from all

participants prior to their involvement. All procedures were carried out in accordance with relevant guidelines and regulations, consistent with the principles set forth in the Helsinki Declaration.

### **Consent for publication**

Not applicable.

## **Competing interests**

The authors declare that there is no conflict of interest regarding the results of this study.

## **Funding**

This study was funded by Kermanshah University of Medical Science, Kermanshah, Iran.

## **Author Contribution**

HM designed, analyzed, interpreted and supervised the entire study. GhA were involved in the study implementation, data analyzing and drafting of the manuscript. FH were involved in the study implementation and drafting of the manuscript. YS were involved in the drafting of the manuscript. AR were involved in the study implementation. All authors read and approved the final manuscript.

## **Acknowledgement**

The authors would like to sincerely thank Kermanshah University of Medical Sciences for their support of this project, and Qazvin University of Medical Sciences for their valuable cooperation in its implementation. We are also deeply grateful to the hemodialysis patients who participated in this study; this research would not have been possible without their consent and collaboration.

## **Data Availability**

The dataset of the current study is available from the corresponding author (Hanieh Moradi).

## **References**

1. World Health organization. Social determinants of health 2020 [Available from: <https://www.who.int/health-topics/social-determinants-of-health#tab>
2. Jumade P, Joshi A, Khanam N, Mudey A. Association of social determinants on well-being of rural construction workers of central India: A cross-sectional study. J Datta Meghe Inst Med Sci Univ.

2021;16(3):444–7.

3. Hacker K, Thomas CW, Zhao G, J'Neka SC, Eke P, Town M. Social Determinants of Health and Health-Related Social Needs Among Adults With Chronic Diseases in the United States, Behavioral Risk Factor Surveillance System, 2022. *Prev Chronic Dis.* 2024;21:E94.
4. Mercen JL, Curran KM, Belmar MT, Sanchez J, Hasan I, Kalra S et al. Social determinants of health impacting access to renal dialysis for racial/ethnic minorities. *Cureus.* 2023;15(9).
5. Wang Y, Qiu Y, Ren L, Jiang H, Chen M, Dong C. Social support, family resilience and psychological resilience among maintenance hemodialysis patients: a longitudinal study. *BMC Psychiatry.* 2024;24(1):76.
6. Sariaslan A, Kavurmacı M. Evaluation of healthy lifestyle behaviors and affecting factors of hemodialysis patients. *J Prev Epidemiol.* 2020;5(2):e19–e.
7. Kuo G, Lee T-H, Chen J-J, Yen C-L, Fan P-C, Lee C-C, et al. The dialysis facility levels and sizes are associated with outcomes of incident hemodialysis patients. *Sci Rep.* 2021;11(1):20560.
8. Baye TA, Gebeyehu H, Bekele M, Abdelmenan S, Ashengo TA, Mengistu B. The economic burden of hemodialysis and associated factors among patients in private and public health facilities: a cross-sectional study in Addis Ababa, Ethiopia. *Cost Eff Resource Allocation.* 2024;22(1):25.
9. Ahmadi M, Mashoufi M, Barzegari S, Kebar SM, Hoseininia S, Hassanlouei B, et al. Geographical accessibility to the hemodialysis centers in Ardabil, Iran. *J Nephropharmacology.* 2021;11(2):e14–e.
10. Safi F, Areshtanab HN, Ghafourifard M, Ebrahimi H. The association between self-efficacy, perceived social support, and family resilience in patients undergoing hemodialysis: a cross-sectional study. *BMC Nephrol.* 2024;25(1):207.
11. Akbari M, Niknejad R. Factors affecting adherence to the treatment in patients under hemodialysis: a qualitative content analysis. *Nurs Midwifery J.* 2020;18(2):141–56.
12. Dehghan M, Namjoo Z, Bahrami A, Tajedini H, Shamsaddini-Lori Z, Zarei A, et al. The use of complementary and alternative medicines, and quality of life in patients under hemodialysis: A survey in southeast Iran. *Complement Ther Med.* 2020;51:102431.
13. Chelak K, Chakole S. The role of social determinants of health in promoting health equality: a narrative review. *Cureus.* 2023;15(1).
14. Berkowitz RL, Bui L, Shen Z, Pressman A, Moreno M, Brown S, et al. Evaluation of a social determinants of health screening questionnaire and workflow pilot within an adult ambulatory clinic. *BMC Fam Pract.* 2021;22(1):256.
15. Andermann A. Screening for social determinants of health in clinical care: moving from the margins to the mainstream. *Public Health Rev.* 2018;39:1–17.
16. O'Brien KH. Social determinants of health: the how, who, and where screenings are occurring; a systematic. 2019.
17. Bradywood A, Watters R, Blackmore C. Implementing screening for social determinants of health using the Core 5 screening tool. *BMJ open Qual.* 2021;10(3):e001362.

18. Oster C, Gransbury B, Anderson D, Martin V, Skuza P, Leibbrandt R. Development and validation of a self-report social determinants of health questionnaire in Australia. *Health Promot Int*. 2023;38(3):daac029.
19. Becerra-Canales B, Galarza-Porras E, Alata-Pimentel A, Dávalos-Almeyda M, Chauca C, Tataje-Napuri FE, et al. Determinantes sociales de la salud: validación peruana del Steps to Better Health Questionnaire (STBH-Q). *Gac Med Mex*. 2024;160(5):546–53.
20. Statistical Centre of Iran. Population-and-Migration: SCol. 2025 [cited 2025 30 May]. Available from: <https://amar.org.ir/population-and-migration>
21. Hair J, Gabriel M, Silva Dd, Braga Júnior S. Development and validation of attitudes measurement scales: fundamental and practical aspects. *RAUSP Manage J*. 2019;54(4):490–507.
22. Lawshe CH. A quantitative approach to content validity. *Pers Psychol*. 1975;28(4).
23. Waltz CF, Bausell BR. *Nursing research: design statistics and computer analysis*. Davis Fa; 1981.
24. Hyrkäs K, Appelqvist-Schmidlechner K, Oksa L. Validating an instrument for clinical supervision using an expert panel. *Int J Nurs Stud*. 2003;40(6):619–25.
25. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459–67.
26. Bujang MA, Baharum N. A simplified guide to determination of sample size requirements for estimating the value of intraclass correlation coefficient: a review. *Archives Orofac Sci*. 2017;12(1).
27. Kenari MA, Ashtiyani JC, Moghadam ASJ. The experience of the addicted families from the stigma of disease: A qualitative study. *Razi J Med Sci*. 2019;26(6):127–36.
28. Dinmohammadi M, Jalali A, Naderipour A. Assessment of psychometric properties of the self-stigma inventory for Iranian families of persons who use drugs. *Front public health*. 2022;10:1017273.
29. Tao S, Zeng X, Liu J, Fu P. Socioeconomic status and mortality among dialysis patients: a systematic review and meta-analysis. *Int Urol Nephrol*. 2019;51:509–18.
30. Norris KC, Beech BM. Social determinants of kidney health: focus on poverty. *Clin J Am Soc Nephrol*. 2021;16(5):809–11.
31. Hundemer GL, Ravani P, Sood MM, Zimmerman D, Molnar AO, Moorman D, et al. Social determinants of health and the transition from advanced chronic kidney disease to kidney failure. *Nephrol Dialysis Transplantation*. 2023;38(7):1682–90.
32. Milenkova M, Trajceska L, Mladenovska D, Bedzeti B, Pushevski V, Rambabova-Busletikj I, et al. Family support is crucial for dialysis patients compliance to treatment and quality of life. *J Morphological Sci*. 2020;3(2):29–36.
33. Rodriguez F, Ornelas Y. FAMILY SUPPORT IN RELATIONS TO THE WELL-BEING OF DIALYSIS PATIENTS. 2020.
34. Islam G, Shah GH, Saeed N, Jones JA, Karibayeva I, editors. *A Cross-Sectional Multivariable Analysis of the Quality of Hemodialysis Patients' Life in Lahore City. Pakistan. Healthcare*; 2025.

35. Lemos CF, Rodrigues MP, Veiga JRP. Family income is associated with quality of life in patients with chronic kidney disease in the pre-dialysis phase: a cross sectional study. *Health Qual Life Outcomes*. 2015;13:1–9.
36. Welgemoed W. Impact of socio-economic factors and Health Related Quality of Life on patients on renal dialysis in Cape Town. 2020.
37. Becerra-Canales B, Melgarejo-Angeles WE, Melgarejo-Reyes JK, Pino-Arana I, Velásquez-Quispe Y, Angulo-Pariona FM, et al. Social Determinants of Health and Noncommunicable Diseases in Rural Primary Care Population. *Revista de Gestão Social e Ambiental*. 2024;18(12):1–19.
38. Oster C, Powell A, Hutchinson C, Leibbrandt R, Bogomolova S. Social Determinants of Health and Health-Related Quality of Life: The Potential Mediating Role of Social Activities, Access to Medical Services, and Access to Social Services. *Australian Journal of Social Issues*; 2025.
39. Urbanski M, Browne T, Plantinga L. The dialysis social worker: Patients’ best defense to meet health-related social needs. *Am J Kidney Dis*. 2024;83(6):707–9.
40. Noviana CM, Zahra AN. Social support and self-management among end-stage renal disease patients undergoing hemodialysis in Indonesia. *J public health Res*. 2022;11(2):jpshr. 2021.733.