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OPEN PEER REVIEW

Socioeconomic Inequalities in Healthcare and Rehabilitation Expenditure: An Analysis of Costs for People with Disabilities in Iran

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

3 comments · 8 Dec 2024 – 23 Dec 2024

Referee 1 Reviewer

REJECT 8 Dec 2024

Dear Editor and authors:
Thank you for inviting me to review this article. With respect, this study does not seem to have provided more information than previous studies in this field in Iran. Additionally, there are some issues that the authors need to clarify further.
Abstract
- What does the author mean by “in the previous survey” in the abstract?
- “The concentration index based on income was positive, meaning inequality favors higher-income groups, while based on educational status, inequality favors individuals with lower education levels”. How do you explain this finding? Why do you think this finding was obtained, given that higher income and higher education are usually related?
Introduction
- My main question is: Compared to the studies of Soltani and Moradi, which were conducted in 2022 and 2017, what new information did this study provide? And why was there a need to conduct this study so soon after the valuable study of Soltani et al.?
- Does the mere use of another index justify the necessity of redoing a study?
- The first and second sentences of the introduction are not related to each other, while the authors have related them to each other!
- The third sentence is lengthy and lacks a reference. The subsequent sentences also lack references, and their sources must be cited before the paragraph concludes! In the following paragraphs, many statements are made without references.
- Please pay attention to periods and commas. A period is placed both before and after the reference at the end of the first paragraph.
Methods, Results and discussion
- Shouldn't the severity and type of disability, as well as place of residence, affect inequality? These factors should be taken into consideration.
- In the discussion, there was no discussion about the findings, and only the results were stated.

Associate Editor

MAJOR REVISION 18 Dec 2024

In my opinion, this article deserves a Major Revision. It addresses an important topic and provides meaningful data. If the authors can properly implement the comments, the paper can be brought to an acceptable level for publication:

Line 40:
Given the importance of the healthcare sector in increasing life expectancy and quality of life, the close connection between healthcare services and the socio-economic development of societies has been well-recognized.

Comment: The sentence is clear but generic. Provide an example, such as "investment in healthcare infrastructure has been shown to reduce poverty rates in developing nations."
Line 42:
However, due to the rapid rise in healthcare expenditure resulting from advancements in medical knowledge,

technology, and treatment methods, lifestyle and cultural and social structures, population growth, and evolving healthcare needs, many communities have faced significant challenges in accessing healthcare services in recent years.

Comment: This sentence is overly complex and difficult to follow. Break it into two sentences. Additionally, specify what "evolving healthcare needs" refers to—such as chronic disease management or aging populations.
Line 46:
Financial resources for these services are a critical issue in health economics.

Comment: This statement is accurate but vague. Mention a specific challenge, such as the reliance on out-of-pocket expenses in many developing countries, including Iran.
Line 50:
It has been demonstrated that the healthcare sector significantly impacts a community's economic progress and, consequently, poverty reduction.

Comment: Provide a specific example or source to back up this claim. For instance, reference a study showing the relationship between healthcare investment and GDP growth in a similar context.
Line 55:
Disability, as one of the outcomes of the absence of health determinants, has profound individual and social consequences.

Comment: The statement is valid, but it would be more impactful if an example of these consequences (e.g., lower employment rates or increased caregiving burdens) were provided.
Line 57:
According to the World Health Organization, over 1 billion people, or 15% of the global population, have some form of disability, with 80% of them living in low- and middle-income countries.

Comment: This is a strong statistic. Adding its implications for Iran or similar countries would enhance its relevance to the study.
Line 67:
Rehabilitation services play a crucial role in preventing and minimizing the disabilities associated with chronic diseases and aging.

Comment: The phrase "preventing and minimizing" could be more specific. State what types of rehabilitation services (e.g., physical therapy, assistive devices) are most effective in achieving these outcomes.
Line 70:
Therefore, with the growing prevalence of disabilities, aging, and injuries resulting from accidents and disasters, rehabilitation services have become an essential component of national healthcare systems.

Comment: This sentence is clear but would be strengthened by linking it explicitly to Iran's demographic trends, such as the impact of urbanization or road traffic accidents.
Line 73:
This finding challenges the traditional view of rehabilitation as a service for a small minority of the population.

Comment: The statement is interesting but lacks clarity. Specify what "traditional view" refers to—rehabilitation as post-injury care or limited to physical therapy?
Line 75:
Rehabilitation services, particularly when provided intensively and by specialists, lead to long-term or medium-term savings in healthcare and other sectors.

Comment: The potential savings are compelling, but an example, such as reduced hospital readmissions or improved workforce participation, would make this more persuasive.
Line 117:
This study is a quantitative descriptive-analytical study, utilizing data from the 2020 survey conducted by Soltani et al.

Comment: The study type is clear, but the rationale for choosing a descriptive-analytical approach should be included. Why was this method deemed most appropriate for studying socioeconomic inequalities?
Line 127:
The study sample consisted of members of the Iranian Society for the Disabled, including 483 adults with physical disabilities, selected through convenience sampling.

Comment: The use of "convenience sampling" is a limitation. This should be acknowledged explicitly, as it impacts the generalizability of findings. Additionally, explain why this sampling method was chosen over more robust alternatives like random sampling.
Line 131:
The dependent variables in this study are healthcare expenditure (outpatient services expenditure) and rehabilitation expenditure (rehabilitation services and assistive device expenditure).

Comment: It's helpful to define these variables. For example, specify whether "outpatient services expenditure" includes medications or only consultations.
Line 133:
Outpatient healthcare expenditure refers to the amount households spent on these services in the month before completing the questionnaire.

Comment: This clarification is useful but could benefit from a brief mention of why only one month of expenditure was considered. Does this time frame sufficiently capture spending patterns?
Line 135:
Rehabilitation and assistive device expenditure refer to expenditures over the past month on services and devices such as wheelchairs, orthopedic shoes, prosthetics, hearing aids, cochlear implants, etc.

Comment: The list of devices and services is detailed. However, consider explaining whether these expenditures are self-reported and how recall bias was mitigated.
Line 139:
The independent variables, based on the questionnaire, include age, gender, education level, marital status, insurance coverage type, employment status, monthly income, household size, and the number of individuals with disabilities in a household.

Comment: The variables are comprehensive, but their relevance to the study's objectives should be briefly justified. For instance, why were "marital status" or "household size" included as predictors of expenditure?
Line 147:
Collected data was imported from Excel to Stata software for analysis. The Gini coefficient and concentration index were used to estimate socio-economic inequalities.

Comment: While the choice of software and indices is clear, the process of data cleaning or validation should also be mentioned. Were any incomplete or anomalous responses excluded?
Line 149:
The Gini coefficient measures differences among individuals or social groups ranked based on their health status by quantifying the relative share of the population in health outcomes.

Comment: This definition is accurate but incomplete. Clarify that the Gini coefficient ranges from 0 (perfect equality) to 1 (maximum inequality).

Line 152:
The Gini coefficient ranges from 0 to 1, where higher values indicate greater inequality.

Comment: While this is correct, mention the specific thresholds or benchmarks (e.g., 0.4 is considered high in income inequality) to contextualize the results.
Line 156:
The concentration index, first introduced by Wagstaff and colleagues in 1989, has been widely used to measure inequality in health and access to healthcare services.

Comment: Good context, but it would be helpful to explain why the concentration index was selected over similar indices. Does it provide unique insights for healthcare spending?
Line 158:
This index, based on the concentration curve, quantitatively shows the degree of inequality in health variables based on income distribution or socio-economic status.

Comment: The explanation is sound but could be simplified for readers unfamiliar with statistical indices. A brief description of what a negative or positive concentration index means would improve clarity.
Line 164:
The concentration index varies between +1 and -1, with negative values indicating that the health variable is concentrated among individuals with lower socio-economic status, and positive values indicating concentration among wealthier individuals.

Comment: Clear explanation. However, it might be useful to provide an example of a real-world health variable with a negative concentration index (e.g., malnutrition).
Line 177:
In this study, among the 483 participants, 61.08% were male and 38.92% were female.

Comment: Demographic data are clearly presented. Including a comparison with national-level disability statistics (e.g., gender distribution among people with disabilities in Iran) would provide better context.
Line 179:
The average age of participants was 55.11 years, with a standard deviation of 14.96.

Comment: It's good to report the standard deviation, but adding age categories (e.g., <30, 30–50, >50) would help identify patterns across different age groups.
Line 181:
Regarding employment status, 66.81% of the participants were unemployed.

Comment: This is an important finding. Consider discussing briefly why unemployment rates are so high—discrimination, accessibility issues, or lack of education?
Line 184:
The average total cost of 24,600,000 Iranian tomans (equivalent to 270.09 PPP US dollars) highlights the significant financial burden faced by individuals with disabilities.

Comment: The average is presented clearly, but a breakdown of how much this constitutes as a percentage of participants' average income would be even more compelling.
Line 194:
The analysis of the Gini coefficient for various expenditures reveals significant inequality in the distribution of these expenses.

Comment: While the Gini coefficient is introduced, the results for each specific type of expenditure (e.g., healthcare vs. rehabilitation) could be summarized here instead of being deferred to tables.

Line 200:
A Gini coefficient close to 0.90 indicates severe inequality in the distribution of total expenditure.

Comment: Replace "close to 0.90" with the exact figure for precision. Additionally, compare this value to known thresholds for severe inequality in healthcare spending.
Line 236:
The present study aimed to examine the socio-economic inequalities in healthcare and rehabilitation expenditure for individuals with disabilities in Iran.

Comment: The objective is restated clearly, but this sentence could also briefly mention the key finding (e.g., "revealing severe disparities in access due to income and insurance gaps").
Line 237:
The findings reveal a significant economic pressure on people with disabilities when accessing healthcare and rehabilitation services.

Comment: This statement is clear, but "significant economic pressure" could be quantified. For example, what percentage of participants' income is spent on these services?
Line 239:
The Gini coefficient analysis indicates notable inequality in the distribution of these expenditures.

Comment: This repeats earlier results. Instead, focus on interpreting the implications of the high Gini coefficient. For example, discuss whether these disparities are more prominent in urban versus rural settings.
Line 242:
A Gini coefficient close to 0.90 reflects severe inequality in the distribution of total expenditure.

Comment: Replace "close to 0.90" with the exact value, as repeated approximations reduce credibility.
Line 244:
Additionally, the high inequality in healthcare expenses signifies that access to health services and their associated expenditure are unevenly distributed among individuals.

Comment: While accurate, this could be more specific. What are the primary drivers of this inequality—income, education, or geographic location?
Line 246:
Furthermore, a high Gini coefficient in rehabilitation services and equipment indicates substantial inequality in rehabilitation-related expenses.

Comment: This repeats earlier findings. To add value, suggest why rehabilitation costs show the highest inequality. For instance, are these services poorly covered by insurance?
Line 248:
The high expenditure on healthcare and rehabilitation services, corroborated by previous studies, combined with deficiencies in insurance coverage, have led individuals with disabilities to incur a significant portion of these expenditures out-of-pocket, resulting in substantial financial challenges.

Comment: The sentence is clear but lengthy. Consider breaking it into two sentences to improve readability.
Line 259:
Research by Yahyavi et al. also indicated that inequality in accessing rehabilitation services favors wealthier individuals, with low-income households facing lower access to these services.

Comment: This is a strong comparison but could benefit from linking Yahyavi et al.'s findings to the current study. For example, do your data confirm or diverge from their conclusions?
Line 262:
Incorporating rehabilitation services into the basic health insurance package, alongside appropriate pricing

and demographic coverage, as well as equitable distribution of rehabilitation service centers in both public and private sectors, could improve equity in accessing rehabilitation services.

Comment: This is a strong policy recommendation. However, suggest which specific rehabilitation services (e.g., assistive devices, physical therapy) should be prioritized for insurance inclusion.
Line 266:
The high Gini coefficient observed in insurance expenditure complicates the landscape of healthcare access.

Comment: The phrase "complicates the landscape" is somewhat vague. Specify whether this means unequal premium structures, lack of coverage for certain groups, or other factors.
Line 270:
Individuals with inadequate insurance coverage may face substantial out-of-pocket expenses, limiting their ability to afford essential treatments.

Comment: This point is valid, but consider providing a real-life example or case study to illustrate the impact on individuals.
Line 275:
Significant inequality in rehabilitation expenditure suggests that access to these essential services is strongly influenced by socioeconomic status.

Comment: This is a key point. Strengthen it by including data from your study, such as a breakdown of rehabilitation costs across income quintiles.
Line 281:
The concentration index of rehabilitation expenditure was also measured in another study. In Sultani et al.'s research, the concentration index was -0.22 and significant, with the wealth index identified as the main factor in socioeconomic inequalities.

Comment: This comparison is helpful. However, explain how your findings align with or differ from Sultani et al.'s results, particularly regarding the wealth index.
Line 286:
The overall expenditure concentration index based on education level was negative and significant.

Comment: Explain why lower education levels are associated with higher expenditures. Is it due to delayed care or higher reliance on out-of-pocket payments?
Line 290:
This dynamic can worsen existing inequalities, as individuals with lower educational backgrounds may encounter more barriers to accessing necessary rehabilitation services and equipment.

Comment: This observation is strong but lacks evidence. Consider including a reference or an example from your data to support this statement.

Editor-in-Chief

MAJOR REVISION 23 Dec 2024

Dear Authors
According to the reviewers' and associate editor's comments, your article requires major revision. When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments.
In addition, please consider the comments below during revision:
Major Comments:

The abstract does not specify how the survey data were collected (e.g., face-to-face, online, etc.), which could affect the reliability of the data.
Minor Comments:

The abstract could benefit from more detailed information on the demographic characteristics of the participants, such as age and gender distribution.
It would be helpful to include more information on the specific components of healthcare and rehabilitation expenses considered in the analysis.

2

Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

We sincerely thank the reviewers for their thoughtful and constructive feedback on our manuscript. Your comments and suggestions have been invaluable in improving the clarity, quality, and overall impact of our work. We appreciate the time and effort you have dedicated to reviewing our submission and addressing key areas for enhancement.

Reviewer 1:

Comment: What does the author mean by "in the previous survey" in the abstract?

Response: We used secondary data from a national survey conducted in 2020. It has been corrected for clarity.

Comment: "The concentration index based on income was positive, meaning inequality favors higher-income groups, while based on educational status, inequality favors individuals with lower education levels". How do you explain this finding? Why do you think this finding was obtained? Because higher income and higher education are usually related.

Response: In the discussion, possible reasons for less education have been mentioned, such as: Lower education levels are often associated with poorer health literacy, which can hinder individuals' ability to effectively navigate the healthcare system. Those with less education may not only use fewer healthcare services but also incur higher expenditures due to delays in care. Regarding high income, this is also an issue that has been confirmed by other studies.

Comment: My main question is, compared to the studies of Soltani and Moradi, which were conducted in 2022 and 2017, what new information did this study provide? And why was there a need to conduct this study with a short time interval from the valuable study of Soltani et al.?

Response: Soltani's study is about Socioeconomic disparities in using rehabilitation services among Iranian adults with disabilities. But our study examined this disparity in costs.

Comment: he first and second sentences of the introduction are not related to each other, while the authors have related them to each other!

Response: In fact, life expectancy depends on health services, and health services depend on socioeconomic factors.

Comment: The third sentence is lengthy and lacks a reference. The subsequent sentences also lack references, and their sources must be cited before the paragraph concludes! In the following paragraphs, many sentences are stated without reference.

Response: It was corrected

Comment: Please pay attention to dots and commas. The dot is placed both before and after the reference at the end of the first paragraph of the dot.

Response: It was corrected

Comment: Shouldn't the severity and type of disability, as well as place of residence, affect inequality? These factors should be taken into consideration.

Response: Given the data we had, these factors were not statistically significant.

Associate Editor's Comments:

Thanks again for your constructive comments. All comments were applied and highlighted in the manuscript. Those that required explanation are listed below.

Line 117:

Comment: The study type is clear, but the rationale for choosing a descriptive-analytical approach should be included. Why was this method deemed most appropriate for studying socioeconomic inequalities?

Response: it is well-suited for studying socioeconomic inequalities, as it allows for a detailed examination of the distribution and determinants of variables across different socioeconomic groups.

Line 127:

Comment: The use of "convenience sampling" is a limitation. This should be acknowledged explicitly, as it impacts the generalizability of findings. Additionally, explain why this sampling method was chosen over more robust alternatives like random sampling.

Response: Due to the limited statistics on people with disabilities, we could not use other methods.

Line 133:

Comment: This clarification is useful but could benefit from a brief mention of why only one month of expenditure was considered. Does this time frame sufficiently capture spending patterns?

Response: The decision to focus on one month of outpatient healthcare expenditure was based on the structure of the original survey, which aimed to minimize recall bias among respondents. A shorter recall period ensures greater accuracy and reliability in self-reported spending data. This explanation has been added to the Methods section.

Line 135:

Comment: The list of devices and services is detailed. However, consider explaining whether these expenditures are self-reported and how recall bias was mitigated.

Response: To mitigate recall bias, the survey focused on expenditures from the past month, a shorter recall period that is widely recognized for improving the accuracy and reliability of self-reported financial data.

Line 139:

Comment: The variables are comprehensive, but their relevance to the study's objectives should be briefly justified. For instance, why were "marital status" or "household size" included as predictors of expenditure?

Response: Studies show that marital status affects health care expenditure (1). Also studies show that factors such as household affect the amount of health service use and, consequently, the monthly expenditure for individuals(2).

Line 147:

Comment: While the choice of software and indices is clear, the process of data cleaning or validation should also be mentioned. Were any incomplete or anomalous responses excluded?

Response: Of course, the data was cleaned, and during this process, much of the information that was not entered correctly was removed. This was also one of the limitations of the study. This problem is probably due to the nature of the study samples (People with disability).

Line 177:

Comment: Demographic data are clearly presented. Including a comparison with national-level disability statistics (e.g., gender distribution among people with disabilities in Iran) would provide better context.

Response: Unfortunately, there are no national statistics of this type on people with disabilities.

Line 200:

Comment: Replace "close to 0.90" with the exact figure for precision. Additionally, compare this value to known thresholds for severe inequality in healthcare spending.

Response: Unfortunately, no threshold specific to the mentioned case was found.

1. Cabrera-Alonso J, Long MJ, Bangalore V, Lescoe-Long M. Marital status and health care expenditures among the elderly in a managed care organization. The health care manager. 2003;22(3):249-55.
2. Halliday TJ, Park M. Household size, home health care, and medical expenditures. Institute for the Study of Labor (IZA) University of Hawai'i at Manoa Retrieved from http://www economics hawaii edu/research/workingpapers/WP_09-16 pdf. 2009.

2 Revision 1

2 comments · 10 Feb 2025 – 15 Feb 2025

Associate Editor

MAJOR REVISION 10 Feb 2025

This manuscript has been significantly improved based on the reviewers' comments and now demonstrates a well-structured format while addressing an important topic. However, further refinements in clarity, coherence, logical flow, grammar, and adherence to academic writing conventions are still necessary to meet the publication standards of this journal. Below is a detailed line-by-line analysis:

In general:

Rewriting sentences for enhanced clarity and readability.
Providing precise numerical values where applicable.
Improving logical coherence and eliminating ambiguities.
Using a more formal and academic writing style.
In the title, "Peoples" is incorrect; "People" should be used instead. My suggestion is "Socioeconomic Inequalities in Health and Rehabilitation Expenditure: An Analysis of Costs for People with Disabilities in Iran."
Lines 5-7: This sentence is too broad and lacks specificity. My suggestion is "Technological advancements, demographic shifts, and lifestyle changes have led to increased healthcare expenditures, making access to healthcare services more challenging."
Lines 8-9: "Significant obstacles" is vague. My suggestion is "People with disabilities, who frequently require specialized healthcare and rehabilitation services, encounter substantial financial and structural barriers to access."
Lines 9-11: The phrase "leaving many individuals... unable to benefit" is not academically precise.
Lines 45-46: The sentence is too long and contains multiple ideas, reducing clarity. My suggestion is "The rapid rise in healthcare expenditures, driven by advancements in medical knowledge, technological innovations, and changing lifestyle and social structures, has placed significant financial strain on healthcare systems."
Line 48: "Aging populations management" is grammatically incorrect.
Line 182: The order of percentage presentation should be from highest to lowest for better clarity.

Editor-in-Chief

MAJOR REVISION 15 Feb 2025

Dear Authors
According to the reviewers' and associate editor's comments, your article needs major revision. When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and submit the required files.

3

Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Thank you for your valuable feedback. I appreciate your comments and suggestions, and I have made the necessary revisions to address them. The changes have been highlighted in the manuscript.The article was also generally revised and improved in terms of writing.

Comment: In title "Peoples" is incorrect; "People" should be used instead. My suggestion is "Socioeconomic Inequalities in Health and Rehabilitation Expenditure: An Analysis of Costs for People with Disabilities in Iran."

Response: Your suggestion has been replaced.

Comment: Lines 5-7: This sentence is too broad and lacks specificity. My suggestion is "Technological advancements, demographic shifts, and lifestyle changes have led to increased healthcare expenditures, making access to healthcare services more challenging."

Response: Your suggestion has been replaced

Comment: Lines 8-9: "Significant obstacles" is vague. My suggestion is "People with disabilities, who frequently require specialized healthcare and rehabilitation services, encounter substantial financial and structural barriers to access."

Response: Your suggestion has been replaced

Comment: Lines 9-11: The phrase "leaving many individuals... unable to benefit" is not academically precise.

Response: Corrected

Comment: Lines 45-46: The sentence is too long and contains multiple ideas, reducing clarity. My suggestion is "The rapid rise in healthcare expenditures, driven by advancements in medical knowledge, technological innovations, and changing lifestyle and social structures, has placed significant financial strain on healthcare systems."

Response: Your suggestion has been replaced

Comment: Line 48: "Aging populations management" is grammatically incorrect.

Response: Corrected

Comment: Line 182: The order of percentage presentation should be from highest to lowest for better clarity.

Response: Corrected

3 Revision 2

2 comments · 1 Mar 2025 – 1 Mar 2025

Associate Editor

ACCEPT 1 Mar 2025

The manuscript is OK for publication.

Editor-in-Chief

ACCEPT 1 Mar 2025

Dear Authors
We are pleased to inform you that your article has been accepted for publication in the MEJRHS. We hope to receive other suitable articles from your group.