PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

Title (Provisional)

An Exploratory Analysis of Factors Influencing Hospital Preferences Among the Lebanese Population: A Cross-Sectional Study

Authors

El Zouki, Christian-Joseph; Chahine, Abdallah; Ghadban, Elie; Harb, Frederic; El-Eid, Jamale; El Khoury, Diala

VERSION 1 - REVIEW

Reviewer	**1**
Name	**Tilahun, Temesgen**
Affiliation	**Wollega University**
Date	**15-Mar-2024**
COI	**no**

Here are my comments:

1. Language and grammar

• Needs revision and correction

2. Abstract section

• Please clearly indicate major and important findings under result part

3. Indicate source and study population

4. Sample size calculation

• How was sample size calculated? Make it in detail

5. Sampling frame: please indicate it clearly

6. Indicate inclusion and exclusion criteria

7. Indicate study variables

8. Study tools

• Was the questionnaire developed/adopted/adapted? Was it validated

9. Results

• Standardize the table labeling

• In table 3, what do points before each number indicate?

10. Limitation

• Try to shorten it

11. Conclusion

• Try to shorten it

12. References

• Try to use recent references

Reviewer	**2**
Name	**Ambasta, Anshula**
Affiliation	**University of Calgary Cumming School of Medicine**
Date	**04-Apr-2024**
COI	**No relevant competing interests**

In this manuscript, the authors describe the results of an exploratory analysis of factors influencing hospital preference among Lebanese people using a cross-section online survey. The writing needs to be improved as there exist grammatical errors and incomplete sentences. There is also opportunity to be more concise with the introduction and discussion sections. I have the following comments regarding the methodology of the study (under Methods).

-It is not clear to me why an online survey was chosen as the preferred method of addressing the research question. The authors should be more explicit about their rationale for this approach. What additional information could have been added through more in-depth qualitative data? How does the lack of qualitative and contextual data limit the findings of this study?

-Readers would appreciate more details around the development of the questionnaire. Who were the experts that were involved, what prior research was used (citations needed), what are the 7Ps of marketing and how exactly did that contribute to this questionnaire?

-Although the authors mention that they 'worked on diversifying data collection by enlisting as many participants as possible from various backgrounds and locations', it is not clear how they actually did that as they released the survey online (through social media and messaging apps)

-What measures were taken to ensure that each response was unique and from their target participant group? How likely is it that other individuals may have received the link to the survey? How does that impact the relevance of study findings? What measures were taken to avoid duplicate or bot responses?

-It would be helpful to further elaborate on the specific selection of participants. Authors state that 'we exclusively targeted Lebanese citizens residing in Lebanon who were not hospitalized during the time of survey submission'. Why was this decision made as opposed to selecting participants currently or recently hospitalized?

-Who were the 20 participants that were part of pilot testing? What had been the purpose of pilot-testing and how (if at all) did the pilot testing impact the subsequent study?

-Minor point but when describing the results, it would be useful for the reader to see the most impactful factor first (i.e. medical staff), as opposed to beginning with the factor of luxury amenities (for instance in the abstract-results section).

VERSION 1 - AUTHOR RESPONSE

Reviewer: 1

Dr. Temesgen Tilahun, Wollega University

Comments to the Author:

Here are my comments:

1. Language and grammar
• Needs revision and correction

Thank you for highlighting this issue. We addressed the language and grammar revisions throughout the manuscript.

2. Abstract section
• Please clearly indicate major and important findings under result part

We totally agree with you, and we've already identified the main factors, which represent the key results of our study. In response to your suggestion, we have included information on the weight of each factor and their internal consistency to further highlight their importance and reliability in contributing to the overall findings.

3. Indicate source and study population

The study population consists of a sample of Lebanese adults who submitted an online survey that was initially distributed through social media platforms and messaging applications. We have provided these details in the 'Methods' section of the manuscript for your reference.

4. Sample size calculation
• How was sample size calculated? Make it in detail

We thank you for your question. The minimal sample size required was determined by following Comrey and Lee's (https://doi.org/10.4324/9781315827506) renowned rule of thumb of including 5 to 10 participants for each survey item to ensure proper factor extraction and stability of the factor structure. Given this guideline and the presence of 70 questions related to hospital factors items in our questionnaire, we determined that a minimum sample size of between 350 to 700 participants would be more than sufficient for conducting our factor analysis. We chose the upper end of this range (700 participants) for better strength of our analysis. We are grateful for your feedback and have made slight revisions to this section to further clarify the sample size calculation.

5. Sampling frame: please indicate it clearly

Due to the design of our study and the country's limited population data resources, we did could not use a traditional sampling frame and therefore did not have a pre-existing list of potential participants. Instead, we targeted Lebanese adults through social media and messaging applications, utilizing snowball sampling techniques to draw our sample from these sources.

6. Indicate inclusion and exclusion criteria

As detailed in the study design section of our methods, participants needed to be Lebanese citizens, residing in Lebanon at the time of the survey, and at least 18 years old. We automatically excluded submissions that did not meet these criteria, as well as those from individuals who were hospitalized during the survey period. We have made slight revisions to this section to further clarify the inclusion criteria.

7. Indicate study variables

Thank you for your comment. Since our primary goal was to conduct an Exploratory Factor Analysis (EFA), our focus was on identifying underlying structures rather than testing predefined variables. In this context, "variables" refers to the survey items that converged into distinct factors. Consequently, the study did not involve predefined independent or dependent variables.

8. Study tools
• Was the questionnaire developed/adopted/adapted? Was it validated

As outlined in our manuscript, the questionnaire was specifically developed for this study, with its items and structure designed from scratch to align with our study objectives. To strengthen its theoretical foundation and content validity, we reviewed the 7Ps of marketing, conducted a comprehensive literature review, and held brainstorming consultations. Additionally, we employed an Exploratory Factor Analysis (EFA) protocol with extensive quality parameters, along with reliability analyses and pilot studies, to ensure thorough validation of the survey.

9. Results
• Standardize the table labeling

To the best of our knowledge, we have adhered to BMJ Open's table formatting standards. The tables are embedded in an editable format within the main Word document, cited in order within the text, and accompanied by appropriate legends. If there are any aspects of our formatting that we may have misunderstood or if further clarification is required, we would be grateful if you could provide additional guidance.

• In table 3, what do points before each number indicate?

Thank you for pointing this out. The data was originally pasted from SPSS, which omits the zeroes before each decimal number. We overlooked adding them back, but we've corrected that now.

10. Limitation
• Try to shorten it

We have revised the limitations section, significantly shortening it while retaining the key points.

11. Conclusion
• Try to shorten it

We have also reviewed this section, and we also shortened it while retaining the key points.

12. References
• Try to use recent references

Thank you for your suggestion. Given the foundational nature of our topic, we relied on well-established references and theoretical frameworks, though a few are not recent. However, in response to your feedback, we have included additional recent references.

Reviewer: 2

Dr. Anshula Ambasta, University of Calgary Cumming School of Medicine

Comments to the Author:

In this manuscript, the authors describe the results of an exploratory analysis of factors influencing hospital preference among Lebanese people using a cross-section online survey. The writing needs to be improved as there exist grammatical errors and incomplete sentences. There is also opportunity to be more concise with the introduction and discussion sections. I have the following comments regarding the methodology of the study (under Methods).

Thank you for your constructive feedback. We have carefully considered your comments and made the necessary revisions. We greatly appreciate your input and hope the changes meet your expectations.

-It is not clear to me why an online survey was chosen as the preferred method of addressing the research question. The authors should be more explicit about their rationale for this approach. What additional information could have been added through more in-depth qualitative data? How does the lack of qualitative and contextual data limit the findings of this study?

Thank you for your questions. We appreciate the opportunity to clarify our methodological choices and address the concerns raised.

We chose an online survey for several reasons. Lebanon's diverse geographical regions, including those affected by political instability, security problems, economic constraints, and remote locations, presented significant challenges for face-to-face data collection. An online survey enabled us to reach a broad and geographically diverse sample of Lebanese adults more efficiently and cost-effectively. Additionally, this method is well-known among the population and is widely used in cross-sectional survey research both locally and globally.

This survey software facilitated the systematic collection of data from a large sample, which was automatically converted to SPSS. This process reduced the potential for halo effects and eliminated manual data entry and transcription errors, thereby enhancing the reliability of the results. This quantitative approach enabled robust statistical analysis of a substantial sample, comprising over 700 responses, which was crucial for identifying and validating patterns and relationships within the data, ensuring that these findings could be confidently compared with other studies. The online format also

ensured a higher level of anonymity and privacy, which is essential for collecting honest responses on sensitive topics like personal health experiences and perceptions of hospital services. Additionally, in-person interviews or focus groups would have required substantial financial and logistical resources.

While the absence of qualitative data does limit our findings, we recognize that qualitative methods, such as interviews or focus groups, could provide valuable context and deeper insights into participants' perceptions of hospital factors. In future research, we could plan to incorporate these quantitative methods with qualitative data to gain a more comprehensive understanding of the factors influencing hospital service perceptions in Lebanon.

We hope this explanation clarifies the limitations we faced due to the current situation in Lebanon, as we remain committed to advancing research in this area despite these challenges.

We have added some of these explanations into the methods and limitations sections.

-Readers would appreciate more details around the development of the questionnaire. Who were the experts that were involved, what prior research was used (citations needed), what are the 7Ps of marketing and how exactly did that contribute to this questionnaire?

In response to your comment, we have clarified in the methods section that the experts involved in the study include the manuscript authors, who are hospital quality and accreditation officers, marketing professionals, and healthcare professionals.

The 7Ps of marketing is a widely recognized framework used to analyze and improve marketing strategies. It includes Product, Price, Place, Promotion, People, Process, and Physical Evidence. In the context of this questionnaire, the 7Ps provided a structured approach to explore various factors that could influence patient perceptions and decision-making regarding hospitals. Each of the 7Ps contributed to the development of specific questions: for example, "Product" informed questions about hospital services and amenities, "People" guided questions about staff and reputation, and "Physical Evidence" helped shape questions about the hospital's environment and facilities. By grounding the survey in this comprehensive marketing theoretical framework, we tried to ensure that the questionnaire thoroughly captured a wide range of factors relevant to participants' perceptions of hospital importance.

Thank you for your valuable comment. We have now included a more detailed explanation of the 7Ps of marketing and their role in the questionnaire in the Methods section, along with the relevant citations for the literature review.

-Although the authors mention that they 'worked on diversifying data collection by enlisting as many participants as possible from various backgrounds and locations', it is not clear how they actually did that as they released the survey online (through social media and messaging apps)

Thank you for your observation. To ensure a diverse sample, we strategically used a variety of social media platforms and messaging apps popular among different demographics and regions. We deliberately distributed the survey across distinct groups and communities to maximize its exposure to diverse demographics. We also encouraged participants to share the survey within their networks, further broadening its reach. This approach aimed to enhance the diversity of our sample and potentially mitigate the inherent bias associated with snowball sampling.

We have clarified this process in the revised manuscript.

-What measures were taken to ensure that each response was unique and from their target participant group? How likely is it that other individuals may have received the link to the survey? How does that impact the relevance of study findings? What measures were taken to avoid duplicate or bot responses?

To adhere to ethical standards of the ethics committee and ensure the honesty and high response rate of participants, we worked on anonymizing all responses. This approach, commonly used in similar studies with digital questionnaires, offers several advantages, although it does present a challenge in verifying that each participant submitted only one response, which we consider highly unlikely.

We closely monitored response patterns and timestamps on Google Forms, which provides a summary of all responses and allows us to track response trends and demographics, therefore ensuring that other individuals in a given target group are filling the survey.

Although Google Forms is a highly reliable survey tool, there is still a risk of duplicate responses. We addressed this issue by identifying and removing duplicates during the data cleaning process in Excel, which offers a feature for this purpose. We found approximately six pairs of duplicate entries, and statistically, it is very unlikely for two individuals to provide identical answers on a nearly 100-question survey while also sharing the same demographic characteristics.

To reduce the risk of automated responses, we included a well-known custom question designed to function similarly to a CAPTCHA. Specifically, the last question of the survey asked participants to solve a simple arithmetic problem: "CAPTCHA: What is 3+2-1?" Participants had to correctly answer this question to enable the "submit" button

in Google Forms. This measure was implemented to ensure that responses were submitted by human participants rather than automated systems.

Each data collection method may have inherent limitations, and it is crucial that we recognize them. However, we believe that the relevance of our results remains robust, especially given our adequate sample size. This is supported by several statistical indicators, such as an excellent KMO measure of sampling adequacy and reliability analysis, which collectively demonstrate the robustness of our data and the effectiveness of our Exploratory Factor Analysis (EFA). In addition, the distinct factors we identified align closely with findings from other research, further validating our results.

-It would be helpful to further elaborate on the specific selection of participants. Authors state that 'we exclusively targeted Lebanese citizens residing in Lebanon who were not hospitalized during the time of survey submission'. Why was this decision made as opposed to selecting participants currently or recently hospitalized?

We chose to target citizens who were not hospitalized during the time of the survey to obtain a broader perspective on hospital factors from the general population, rather than focusing exclusively on the experiences of those currently or recently hospitalized. This approach allowed us to capture the views of a diverse group, including individuals who may have past experiences with hospitals or who could potentially use hospital services in the future. By doing so, we aimed to gain a more comprehensive understanding of public perceptions and expectations, which are crucial for evaluating hospital services from a marketing and strategic planning standpoint. Additionally, we wanted to work on something original and new, distinguishing our research from existing studies that focus on the experiences of hospitalized patients. Targeting non-hospitalized individuals also helped avoid biases that might arise from participants' immediate experiences or emotions associated with hospitalization, thereby ensuring that our findings reflect general attitudes rather than context-specific opinions.

We have added more details about this decision in the introduction section.

We also reference the following statement from our limitations section: "It is also important to acknowledge that our sample comprises "potential" patients. As such, opinions may differ from decisions made in a real hospitalization context. Nevertheless, our study yielded results that align with findings in the existing literature. This suggests a remarkable consistency in the factors influencing hospital preference, indicating that the expectations expressed by our participants mirror patterns observed in real-world decision-making scenarios."

-Who were the 20 participants that were part of pilot testing? What had been the

purpose of pilot-testing and how (if at all) did the pilot testing impact the subsequent study?

The 20 participants in the pilot testing phase were a diverse group invited by the research team. The primary goal of the pilot testing was to assess the clarity, relevance, and feasibility of the study's survey and data collection tools, while also identifying any technical issues or participant concerns. Feedback from the pilot phase led to only minor revisions in the wording of some survey questions. Importantly, these pilot participants were not included in the final analysis. Additional details about the pilot phase have been provided in the "Patient and Public Involvement" section.

-Minor point but when describing the results, it would be useful for the reader to see the most impactful factor first (i.e. medical staff), as opposed to beginning with the factor of luxury amenities (for instance in the abstract-results section).

Thank you for your valuable feedback. We fully agree with your suggestion and have revised the abstract and results sections to prioritize the most impactful factor. While the tables in the results still reflect the original Promax rotated matrix as extracted from SPSS, we have reordered the factors to highlight the most impactful ones according to the factor scores, in line with your recommendation.

VERSION 2 - REVIEW

Reviewer	**2**
Name	**Ambasta, Anshula**
Affiliation	**University of Calgary Cumming School of Medicine**
Date	**16-Sep-2024**
COI	

The authors have sufficiently addressed the questions that were raised during the prior review. The language is much improved, however there still exist some minor grammatical errors. The introduction and discussion sections are very lengthy and can be made much more succinct and concise.

VERSION 2 - AUTHOR RESPONSE

Reviewer: 2

Dr. Anshula Ambasta, University of Calgary Cumming School of Medicine

Comments to the Author:

The authors have sufficiently addressed the questions that were raised during the prior review. The language is much improved, however there still exist some minor grammatical errors. The introduction and discussion sections are very lengthy and can be made much more succinct and concise.

Thank you for your feedback and for encouraging us to improve the quality of our paper to meet your expectations. We have carefully considered your suggestions, reviewed the grammatical errors, and shortened both the introduction and discussion sections as recommended.