PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Economics of Primary Healthcare: Cost Estimation of Clinical Services at Primary Care Facilities in The Six Countries of The Gulf Cooperation Council.
AUTHORS	Elmusharaf, Khalifa; Poix, Sébastien; Grafton, Daniel; Jung, Johanna; Gribble, Rebecca; Stanton, Rachael; Mahmoud, Lamia; Al Asfoor, Deena; Alawadi, Tayba; Mustafa, Mohammed; Shuwaiter, Lulwa; Alsuwaidan, Mohammed S.; Al-Abri, Zahir; Al-Sabahi, Sultana; Fadda, Sherif; Syed, Hassan Raza; Almutairi, Muneera; Al-Farsi, Yahya; Banatvala, Nicholas; Tarlton, Dudley

VERSION 1 – REVIEW

REVIEWER	Archana Bhaw-Luximon University of Mauritius
REVIEW RETURNED	10-Sep-2023

GENERAL COMMENTS	The manuscript reports on the use of an ingredient-based method to estimate the cost of delivering a selection of services at PHC facilities in the six GCC countries in 2019. The following have to be addressed before it can be reconsidered. 1. The data was collected in 2019 which is before covid-19 pandemic. This manuscript would gain in novelty and be updated if the authors could discuss and add any data available during and post-covid to assess the impact of pandemic on PHC. They could estimate the variation in the economics of PHC during a pandemic. This would support pandemic preparedness. 2. The manuscript should include and discuss the GDP of these countries related to PHC expenses. It is also mentioned very briefly in the discussion that the population demographics were different in the different countries. This aspect should be further discussed with respect to expenses in the different categories selected namely general practice, NCDs, child health, immunisation, oral and dental care, nutrition, reproductive, maternal, neonatal and child health, and mental health. This would further improve the conclusions of the study. The authors mentioned in their results section that 'two programmes that accounted for the highest costs were general practice and NCDs, constituting 76% of the total costs modelled, while the programme with the lowest costs was mental health'. Can the authors discussed this finding with respect to maturity of the programmes and population demographics? Are NCDs programmes more accessible and more advertised compared to Mental Health programmes?

	3. TableS1 indicates that CVD and diabetes are well covered in all the countries under study. Would this add a bias towards cost estimation?

REVIEWER	Ping He Peking University, China Center for Health Development Studies
REVIEW RETURNED	26-Sep-2023

GENERAL COMMENTS	I sincerely appreciated the opportunity to review your work titled "Economics of Primary Healthcare: Cost Estimation of Clinical Services at Primary Care Facilities in The Six Countries of The Gulf Cooperation Council". I find the topic of your study both interesting and significant. The study focused on the costs related to primary health care within the scope of the Six Countries of the Gulf Cooperation Council. The study revealed that general practice and non-communicable diseases (NCDs) accounted for the highest proportion of costs. However, in its current state, I believe the manuscript requires further improvements before it can be considered suitable for publication. I have several comments that need to be addressed, along with some thoughts on your findings. There are fundamental concerns about this study. 1. Clarify the contribution of study: While the authors briefly mention the key findings of your study, it is important to clearly state the contribution of this study to the existing literature. This will help readers understand the significance of your findings and the implications for future research. 2. Broaden the Scope of Comparison: Current research focuses on the Six Countries of the Gulf Cooperation Council, but lacks results comparing them to other countries or regions. This would contribute to a more in-depth discussion of the research findings. 3. Focus on Effectiveness: Most of the results analyze the cost, but costs are influenced by numerous factors. Directly comparing the costs of different countries may introduce significant confounding factors. Therefore, if data related to effectiveness is available, consider adding content related to effectiveness. 4. Trend Analysis: The current analysis compares results among different countries. If trends of cost change can be added, and compared among different countries, it will enrich the results of this study and help reveal a comprehensive picture of costs. The work is interesting and valuable; however, this work needs to be improved for publishing in this prestigious journal.

VERSION 1 – AUTHOR RESPONSE

#	Comment	Reply/Action
-	**Reviewer 1**	

#1	The data was collected in 2019 which is before covid-19 pandemic. This manuscript would gain in novelty and be updated if the authors could discuss and add any data available during and post-covid to assess the impact of pandemic on PHC. They could estimate the variation in the economics of PHC during a pandemic. This would support pandemic preparedness.	Thank you for bringing up this important consideration. Investigating the potential impact of the COVID-19 pandemic on PHC is indeed an interesting research axis. However, the scope of this study was agreed upon in collaboration with the Ministries of Health of the six countries. The decision to utilise data from 2019 was made to ensure that the results are not biased by the COVID-19 pandemic. While we fully acknowledge the relevance of assessing the pandemic's impact on PHC, there is no plan to replicate this study with post-COVID-19 data for the moment.
#2	The manuscript should include and discuss the GDP of these countries related to PHC expenses.	The selected services represent 0.34% of the combined GDP in 2019, with variations from 0.28% in the UAE and KSA to 0.88% in Kuwait. In response to your suggestion, we have added this information in the results section **(P.9, L.10-11 & Table 1)**. We also mentioned WHO's position (1% of the GDP invested in PHC) in the discussion section while acknowledging the challenges in assessing our results in relation to this recommendation **(P.13, L.12-15).**
#3	It is also mentioned very briefly in the discussion that the population demographics were different in the different countries. This aspect should be further discussed with respect to expenses in the different categories selected namely general practice, NCDs, child health, immunisation, oral and dental care, nutrition, reproductive, maternal, neonatal and child health, and mental health. This would further improve the conclusions of the study.	Thank you for this valuable suggestion. We further discuss the unique demographics of the GCC countries (age structure, proportion of non-nationals) in the discussion **(P.13, L.20-27).**
#4	The authors mentioned in their results section that 'two programmes that accounted for the highest costs were general practice and NCDs, constituting 76% of the total costs modelled, while the programme with the lowest costs was mental health'. Can the authors discussed this finding with respect to maturity of the programmes and population demographics? Are NCDs programmes more accessible and more advertised compared to Mental Health programmes?	The NCD and general practice programmes are indeed more established and structured than mental health in the region. In response to your suggestion, we have added a paragraph to the discussion section to mention these differences and put the results into perspective **(P.14, L.14-25).**

#5	TableS1 indicates that CVD and diabetes are well covered in all the countries under study. Would this add a bias towards cost estimation?	Table S1 indicates that these services exist at the PHC level in all the countries, with variable coverage rates. Indeed, it is important to acknowledge that NCD services, notably those related to CVD and diabetes, are in greater proportion in the list of selected services than other services. We acknowledge that this imbalance, mainly due to the nature of services available in the OneHealth Tool Costing Module, can introduce a bias. However, we limited this risk by involving the six Ministries of Health in the initial selection and offered them the possibility of including additional services. We have, then, good reasons to think that the substantial contribution of the NCD program to the total costs reflects the activity and priorities of the public PHC system in each country, as well as the higher per-patient cost required to treat chronic health issues. In response to your comment, we have addressed this point explicitly in the manuscript by completing the limitations section **(P.15, L.11-16)**
-	**Reviewer 2**	
#6	Clarify the contribution of study: While the authors briefly mention the key findings of your study, it is important to clearly state the contribution of this study to the existing literature. This will help readers understand the significance of your findings and the implications for future research.	We appreciate the reviewer's insightful comment. In response to your comment, we have revised the discussion section to explicitly articulate the value of these findings for policymakers and, more broadly, its contribution to existing literature **(P.13, L.4-11)**.
#7	Broaden the Scope of Comparison: Current research focuses on the Six Countries of the Gulf Cooperation Council, but lacks results comparing them to other countries or regions. This would contribute to a more in-depth discussion of the research findings.	One study shares methodological similarities with this one: *Cost to Achieve Indonesia's Mid-Term Development Plan (RPJMN) 2020-2024 Targets: A Primary Healthcare Costing Approach Using the OneHealth Tool*. Unfortunately, a direct comparison was not possible due to variations in interventions and programs selected and costing approach (overheads and structure costs were estimated, for example). Other studies we identified did not focus on PHC particularly and/or used very different methodologies, which would not allow fruitful comparison. For transparency, we added this consideration to the discussion section **(P.13, L.31-37).**

#8	Focus on Effectiveness: Most of the results analyze the cost, but costs are influenced by numerous factors. Directly comparing the costs of different countries may introduce significant confounding factors. Therefore, if data related to effectiveness is available, consider adding content related to effectiveness.	Thank you for your insightful comment on the importance of considering effectiveness. We acknowledge that costs are influenced by many factors, making comparisons across countries particularly challenging. This is something we clearly mentioned at the end of the limitations section **(P.15, L.30-33)**. This consideration was thoroughly discussed within our research team and in collaboration with the Ministries of Health. While we acknowledge the merit of integrating effectiveness data, we did not manage to integrate this perspective due to a lack of available and/or comparable data. However, we appreciate your suggestion, and we have incorporated it into our manuscript as a recommendation for future studies **(P.17, L.5-7).**
#9	Trend Analysis: The current analysis compares results among different countries. If trends of cost change can be added, and compared among different countries, it will enrich the results of this study and help reveal a comprehensive picture of costs.	The second reviewer also brought up a similar consideration. We explained below why, although we fully recognise the relevance of this suggestion, analysing the costs of the selected services over several years was not possible **(cf. *Comment #1*)**.

VERSION 2 – REVIEW

REVIEWER	Archana Bhaw-Luximon University of Mauritius
REVIEW RETURNED	16-Feb-2024

GENERAL COMMENTS	The authors have addressed all the suggestions and queries. It was important to mention the limitations of this study.

REVIEWER	Ping He Peking University, China Center for Health Development Studies
REVIEW RETURNED	29-Feb-2024

GENERAL COMMENTS	I sincerely appreciated the opportunity to review your work titled "Economics of Primary Healthcare: Cost Estimation of Clinical Services at Primary Care Facilities in The Six Countries of The Gulf Cooperation Council" I find the topic of your study both interesting and significant. The study explored the costs of PHC delivery in six countries of the Gulf Cooperation Council. However, in its current state, I believe the manuscript requires further improvements before it can be considered suitable for publication. I have several comments that need to be addressed, along with some thoughts on your findings. There are some minor concerns about this study: 1. Provide additional context or examples to illustrate the diverse range of services included under general practice and their

	contribution to the overall costs of primary healthcare delivery in the GCC countries. 2. Provide additional details on the criteria or considerations used to categorize services within each program, such as general practice or NCDs, to enhance transparency and reproducibility of the study methodology. 3. Offer further explanation or examples of the variations in NCD-related costs among the GCC countries, particularly concerning Qatar's utilization of actual drug and supplies costs compared to other countries. 4. Provide additional insights into the factors contributing to variations in per capita costs and coverage rates among the GCC countries, such as differences in healthcare delivery organization and population demographics. The work is interesting and valuable; however, this work needs to be improved for publishing in this prestigious journal.

VERSION 2 – AUTHOR RESPONSE

-	**Reviewer 1**	
-	-	-
-	**Editor**	
#1	Provide additional context or examples to illustrate the diverse range of services included under general practice and their contribution to the overall costs of primary healthcare delivery in the GCC countries.	To address this comment, we modified the section “Scope of the study” to provide more explanations and mentioned a few services included under general practice **(P.6, L.8-16)**.
#2	Provide additional details on the criteria or considerations used to categorize services within each program, such as general practice or NCDs, to enhance transparency and reproducibility of the study methodology.	Additional details (i.e. use of annual health reports to determine the scope of the general practice program) were provided in the paragraph mentioned above **(P.6, L.8-16)**.
#3	Offer further explanation or examples of the variations in NCD-related costs among the GCC countries, particularly concerning Qatar's utilization of actual drug and supplies costs compared to other countries.	The elevated costs can also be explained by the substantial per-patient costs, exacerbated by their chronic nature. The differences we observed may result from many factors, but it is likely that the varying proportion of services delivered in the private/public sector plays an important role. It is also possible that there is a form of overlapping between the services provided in specialised clinics and general practice. As suggested in the two updated paragraphs **(P.14, L.8-10 and L.12-15)**, these reasons add to demographic and epidemiological variations between the six countries. Regarding Qatar, utilisation of actual drugs and supplies costs clearly amplified the proportion of costs dedicated to NCDs. As mentioned in the discussion **(P.14, L.21)**, discussing this variation in more detail

		would require further investigation, which could not be conducted as part of this study.
#4	Provide additional insights into the factors contributing to variations in per capita costs and coverage rates among the GCC countries, such as differences in healthcare delivery organization and population demographics.	To illustrate the possible explanations we provided in the discussion, we mentioned and quantified differences in terms of domestic general government health expenditure in the six countries **(P.13, L.19-22)**. We also added a reference to the six reports recently published, where the characteristics and specificities of each country is further discussed **(P.13, L.19).**