

# Impact of Public Hospital Fees on Maternal and Child Healthcare Access Among Internally Displaced Persons in Garasbaaley District, Mogadishu, Somalia

Faysal Abdullahi Salad

faysalsalad44@gmail.com

Al Hayat Medical University

Abdullahi Mohamed Hamud

Jazeera University

Yahye Abdulkadir Mohamed

Salaam University

Mohamed Ismael Iman

Al Hayat Medical University

Burhan Abdule Gure

Al Hayat Medical University

---

## Research Article

**Keywords:** Internally displaced persons, Maternal health, Child health, Hospital fees, Healthcare access, Somalia, Skilled birth attendance

**Posted Date:** August 14th, 2026

**DOI:** <https://doi.org/10.21203/rs.3.rs-10248562/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

Maternal and child healthcare services are essential for reducing preventable maternal and neonatal morbidity and mortality. However, access to these services remains limited among internally displaced persons (IDPs), particularly in fragile and conflict-affected settings such as Somalia. Public hospital user fees may further restrict access to essential maternal and child healthcare services among vulnerable populations.

## Methods

A community-based analytical cross-sectional study with a quantitative approach was conducted among 380 IDP women aged 15–49 years in Garasbaaley District, Mogadishu, Somalia. Participants were selected using multistage sampling. Data were collected using a structured interviewer-administered questionnaire. Descriptive statistics, chi-square tests, and multivariable binary logistic regression were performed using SPSS version 26. Statistical significance was set at  $p < 0.05$ .

## Results

The majority of respondents were aged 25–34 years (66.8%), married (76.1%), had no formal education (68.9%), and earned USD 50–100 per month (69.7%). Hospital fee affordability was significantly associated with skilled birth attendance ( $\chi^2 = 32.69$ ,  $p < 0.001$ ) but not with antenatal care, postnatal care, or child immunization. In multivariable analysis, duration of stay in IDP camps (AOR = 1.863, 95% CI: 1.195–2.905,  $p = 0.006$ ) and hospital fee affordability (AOR = 0.207, 95% CI: 0.112–0.385,  $p < 0.001$ ) were significant predictors of skilled birth attendance. No other variables showed statistically significant associations.

## Conclusion

Public hospital fees remain a major barrier to skilled birth attendance among IDPs in Garasbaaley District. Strengthening financial protection mechanisms such as fee exemptions and targeted maternal health financing is essential to improve equitable access to safe delivery services in humanitarian settings.

## 1. BACKGROUND

Maternal and child healthcare access is a fundamental component of global health equity and a key priority within the Sustainable Development Goals, particularly Goal 3, which aims to ensure healthy lives and promote well-being for all people. Although significant progress has been achieved in reducing

maternal and child mortality worldwide, millions of women and children continue to experience preventable deaths due to limited access to timely and affordable healthcare services. Barriers to healthcare utilization are multifactorial and include poverty, inadequate health infrastructure, geographical limitations, low health awareness, and financial constraints. Among these factors, the cost of healthcare services remains one of the most important determinants influencing whether individuals seek and continue essential maternal and child health services. [1, 2, 6].

Financial barriers to healthcare access are particularly significant in low- and middle-income countries where many households depend on out-of-pocket payments to obtain healthcare services. Direct medical costs, including consultation fees, laboratory investigations, medications, and hospital charges, may discourage poor households from seeking necessary care or may result in delays in receiving treatment. These financial challenges disproportionately affect women and children because they require frequent contact with healthcare systems for services such as antenatal care (ANC), skilled birth attendance (SBA), postnatal care (PNC), and childhood immunization. Reducing financial barriers through affordable healthcare systems and protection mechanisms is therefore essential for improving healthcare equity and achieving universal health coverage. [11].

Antenatal care is an important intervention for improving maternal and newborn health outcomes by enabling early detection and management of pregnancy-related complications. Similarly, skilled birth attendance and postnatal care significantly reduce the risks associated with childbirth and the postpartum period. However, utilization of these services remains inadequate in many resource-limited settings, particularly among populations experiencing economic vulnerability. Studies from sub-Saharan Africa have demonstrated that household income, healthcare costs, and affordability of services are strongly associated with maternal healthcare-seeking behaviors, with poorer women often experiencing lower utilization of essential services compared with economically advantaged groups. [5, 6].

Child healthcare services, including routine immunization, growth monitoring, and treatment of childhood illnesses, are also affected by financial barriers. Childhood vaccination remains one of the most effective public health interventions for preventing infectious diseases and reducing child mortality. However, children living in disadvantaged households, conflict-affected communities, and displaced populations often experience lower immunization coverage due to multiple barriers, including healthcare costs, transportation difficulties, and limited availability of health services. Addressing these challenges requires targeted interventions that improve affordability, accessibility, and continuity of child healthcare services among vulnerable populations. [7, 8].

Somalia faces considerable challenges in achieving optimal maternal and child health outcomes due to decades of conflict, political instability, recurrent humanitarian crises, poverty, and limited healthcare infrastructure. The country continues to experience high maternal and child mortality rates compared with global averages. Health service delivery is particularly challenging among internally displaced persons (IDPs), who represent a large and vulnerable population affected by displacement, unemployment, poor living conditions, and limited access to essential services. IDP communities often

depend on humanitarian assistance and public healthcare facilities, where additional healthcare-related payments may become a significant obstacle to accessing necessary maternal and child health services. [9, 10].

In Mogadishu, the capital city of Somalia, rapid urban displacement has resulted in the establishment of numerous IDP settlements, including communities located in Garasbaaley District. These populations frequently experience socioeconomic difficulties that may influence healthcare utilization patterns. Although public hospitals and health facilities provide essential maternal and child healthcare services, the requirement to pay hospital fees and other associated costs may create delays in seeking care or prevent families from utilizing available services. Understanding how healthcare fees influence maternal and child healthcare access among IDPs is important for designing effective policies that promote equitable healthcare delivery. [10, 11].

Despite the importance of financial accessibility in maternal and child health outcomes, limited empirical evidence exists regarding the effect of public hospital fees on healthcare utilization among internally displaced populations in Somalia. Most available studies have focused broadly on healthcare challenges among conflict-affected populations, while limited attention has been given to the specific relationship between healthcare costs and utilization of maternal and child health services among IDP communities. Generating local evidence from districts such as Garasbaaley is essential for informing health planners, humanitarian organizations, and policymakers in developing strategies to reduce financial barriers and improve access to essential healthcare services. [11, 12].

## **2. METHODS**

### **Study design**

A community-based analytical cross-sectional study with a quantitative approach was conducted to assess the impact of public hospital fees on maternal and child healthcare utilization among internally displaced persons (IDPs) in Garasbaaley District, Mogadishu, Somalia.

### **Study setting**

The study was carried out in Garasbaaley District, Mogadishu, Somalia, an area hosting large IDP populations affected by conflict, drought, flooding, and poverty. Health services are provided through public facilities, private clinics, and humanitarian programs.

### **Study population**

The study included IDP women aged 15–49 years who had at least one child under five years or a pregnancy within the previous two years.

### **Eligibility criteria**

Eligible participants were women aged 15–49 years, residents of selected IDP camps for at least six months, with relevant maternal history, and who gave informed consent. Critically ill or non-communicative individuals were excluded.

### **Sample size**

A total of 380 participants was determined using a single population proportion formula (95% confidence level, 5% margin of error,  $p = 0.5$ ), with adjustment for non-response.

### **Sampling procedure**

A multistage sampling technique was used: IDP settlements were randomly selected, households were chosen systematically, and one eligible woman per household was selected using simple random sampling where necessary.

### **Data collection**

Data were collected using a structured interviewer-administered questionnaire covering socio-demographics, income, hospital fee affordability, and utilization of antenatal care, skilled birth attendance, postnatal care, and child immunization. Trained interviewers conducted face-to-face interviews. The questionnaire used in this study was developed by the research team following a comprehensive review of the literature on maternal and child healthcare utilization, healthcare financing, and access to health services among internally displaced populations. The questionnaire was prepared in English, translated into Somali, and back-translated to ensure consistency. It was pretested among 5% of the study population outside the study area, and the final English-language version has been provided as Supplementary File 1.

### **Data quality assurance**

The tool was validated by experts, pretested on 5% of the sample in a non-study IDP site, and revised accordingly. Data collectors were trained, and supervisors checked completed questionnaires daily for completeness and consistency.

### **Study variables**

Outcomes included antenatal care, skilled birth attendance, postnatal care, and child immunization. The main exposure was affordability of hospital fees. Covariates included socio-demographic and economic factors.

### **Statistical analysis**

Data were analyzed using SPSS version 26. Descriptive statistics summarized variables. Chi-square tests assessed associations, and multivariable logistic regression identified predictors. Results were reported as adjusted odds ratios (AORs) with 95% confidence intervals at  $p < 0.05$ .

## **Ethical considerations:**

### **Ethical approval**

for this study was obtained from **Al Hayat Medical University Research Ethics Committee** under approval number: *AMU/RIC/IRB/03/JUNE/2026*. Written informed consent was obtained from all participants before enrolment. For participants younger than 16 years of age, written informed consent was obtained from their parents or legal guardians prior to participation. All study procedures were conducted in accordance with the Declaration of Helsinki.

## **3. RESULT**

### **UNIVARIATE ANALYSIS**

Table 1  
**Socio-Demographic Characteristics of Respondents (N = 380)**, The demographic characteristics of the internally displaced persons in Garasbaaley District are presented in Table 1.

| Characteristics                     | Frequency (n) | Percentage (%) |
|-------------------------------------|---------------|----------------|
| <b>Age Group</b>                    |               |                |
| 15–24 years                         | 62            | 16.3           |
| 25–34 years                         | 254           | 66.8           |
| 35–44 years                         | 57            | 15.0           |
| 45–49 years                         | 7             | 1.8            |
| <b>Total</b>                        | <b>380</b>    | <b>100.0</b>   |
| <b>Marital Status</b>               |               |                |
| Married                             | 289           | 76.1           |
| Divorced                            | 91            | 23.9           |
| <b>Total</b>                        | <b>380</b>    | <b>100.0</b>   |
| <b>Educational Level</b>            |               |                |
| No formal education                 | 262           | 68.9           |
| Primary education                   | 110           | 28.9           |
| Secondary education                 | 8             | 2.1            |
| <b>Total</b>                        | <b>380</b>    | <b>100.0</b>   |
| <b>Monthly Income (USD)</b>         |               |                |
| \$50–\$100                          | 265           | 69.7           |
| \$101–\$150                         | 105           | 27.6           |
| \$151–\$200                         | 10            | 2.6            |
| <b>Total</b>                        | <b>380</b>    | <b>100.0</b>   |
| <b>Duration of Stay in IDP Camp</b> |               |                |
| Less than 1 year                    | 48            | 12.6           |
| 1–3 years                           | 109           | 28.7           |
| More than 3 years                   | 223           | 58.7           |
| <b>Total</b>                        | <b>380</b>    | <b>100.0</b>   |

The study included 380 respondents. The majority of participants (66.8%) were aged 25–34 years, followed by 15–24 years (16.3%), 35–44 years (15.0%), and 45–49 years (1.8%). Most respondents were married (76.1%), while 23.9% were divorced. Regarding educational status, 68.9% had no formal education, 28.9% had primary education, and 2.1% had secondary education. In terms of monthly income, 69.7% earned USD 50–100, 27.6% earned USD 101–150, and 2.6% earned USD 151–200. Regarding duration of stay in the IDP camp, 58.7% had lived in the camp for more than three years, 28.7% for 1–3 years, and 12.6% for less than one year.

## BIVARIATE ANALYSIS

Table 2

**Association Between Hospital Fee Affordability and Antenatal Care (ANC) Attendance (n = 380)** The results indicate that there was no statistically significant association between perceived affordability of hospital fees and antenatal care (ANC) attendance among respondents ( $\chi^2 = 0.182$ ,  $p = 0.670$ ). As shown in Table 2.

| Hospital Fees Affordable | ANC Attended Yes, n (%) | ANC Not Attended No, n (%) | Total      | $\chi^2$     | p-value      |
|--------------------------|-------------------------|----------------------------|------------|--------------|--------------|
| Yes                      | 64 (81.0%)              | 15 (19.0%)                 | 79         |              |              |
| No                       | 250 (83.1%)             | 51 (16.9%)                 | 301        |              |              |
| <b>Total</b>             | <b>314 (82.6%)</b>      | <b>66 (17.4%)</b>          | <b>380</b> | <b>0.182</b> | <b>0.670</b> |

Although ANC attendance was slightly higher among those who perceived fees as unaffordable (83.1%) compared to those who considered fees affordable (81.0%), the difference was minimal and not statistically meaningful. This suggests that perceived affordability of hospital fees was not a determining factor for ANC utilization in this study population.

Table 3

**Association Between Public Hospital Fee Affordability and Skilled Birth Attendance** The results show a statistically significant association between perceived affordability of public hospital fees and skilled birth attendance ( $\chi^2 = 32.69$ ,  $p < 0.001$ ). As detailed in Table 3

| Hospital Fees Affordable | Skilled Delivery Yes, n (%) | Skilled Delivery No, n (%) | Total      | $\chi^2$     | p-value           |
|--------------------------|-----------------------------|----------------------------|------------|--------------|-------------------|
| Yes                      | 51 (64.6%)                  | 28 (35.4%)                 | 79         |              |                   |
| No                       | 272 (90.4%)                 | 29 (9.6%)                  | 301        |              |                   |
| <b>Total</b>             | <b>323 (85.0%)</b>          | <b>57 (15.0%)</b>          | <b>380</b> | <b>32.69</b> | <b>&lt; 0.001</b> |

Interestingly, skilled birth attendance was higher among respondents who reported that hospital fees were not affordable (90.4%) compared to those who considered fees affordable (64.6%). This indicates an inverse and unexpected relationship, suggesting that perceived unaffordability of hospital fees does not reduce, and may even coincide with increased utilization of skilled delivery services in this population.

Table 4

**Association Between Delay in Hospital Visit Due to Cost and Postnatal Care (PNC) Utilization** The results indicate that there was no statistically significant association between delay in seeking hospital care due to cost and postnatal care (PNC) utilization ( $\chi^2 = 3.603$ ,  $p = 0.058$ ). As shown on Table 4.

| Delay Due to Cost | PNC Attended Yes, n (%) | PNC Not Attended No, n (%) | Total      | $\chi^2$     | p-value      |
|-------------------|-------------------------|----------------------------|------------|--------------|--------------|
| Yes               | 53 (55.8%)              | 42 (44.2%)                 | 95         |              |              |
| No                | 127 (44.6%)             | 158 (55.4%)                | 285        |              |              |
| <b>Total</b>      | <b>180 (47.4%)</b>      | <b>200 (52.6%)</b>         | <b>380</b> | <b>3.603</b> | <b>0.058</b> |

Although PNC utilization was higher among respondents who reported delaying hospital visits due to cost (55.8%) compared to those who did not delay care (44.6%), the observed difference did not reach statistical significance.

Table 5

**Association Between Household Monthly Income and Child Immunization Attendance** The results show that there was no statistically significant association between household monthly income and child immunization status ( $\chi^2 = 0.268$ ,  $p = 0.966$ ). As shown in Table 5,

| Household Monthly Income (USD) | Immunization Yes, n (%) | Immunization No, n (%) | Total      | $\chi^2$         | p-value      |
|--------------------------------|-------------------------|------------------------|------------|------------------|--------------|
| \$50 – \$100                   | 79 (34.1%)              | 153 (65.9%)            | 232        |                  |              |
| \$101 – \$150                  | 38 (32.5%)              | 79 (67.5%)             | 117        |                  |              |
| \$151 – \$200                  | 8 (30.8%)               | 18 (69.2%)             | 26         |                  |              |
| Above \$200                    | 2 (40.0%)               | 3 (60.0%)              | 5          |                  |              |
| <b>Total</b>                   | <b>127 (33.4%)</b>      | <b>253 (66.6%)</b>     | <b>380</b> | <b>0.268 (3)</b> | <b>0.966</b> |

Although immunization coverage varied slightly across income groups, ranging from 30.8% to 40.0%, these differences were minimal and not statistically meaningful.

Table 6

**Association Between Educational Level and Place of Delivery for Last Child** As Table 6 shows, the results indicate that there was no statistically significant association between educational level and place of delivery for the last child ( $\chi^2 = 1.430$ ,  $p = 0.489$ ).

| Educational Level   | Public Hospital, n (%) | Private Clinic, n (%) | Total      | $\chi^2$     | p-value      |
|---------------------|------------------------|-----------------------|------------|--------------|--------------|
| No formal education | 108 (45.0%)            | 132 (55.0%)           | 240        |              |              |
| Primary education   | 42 (38.5%)             | 67 (61.5%)            | 109        |              |              |
| Secondary education | 14 (46.7%)             | 16 (53.3%)            | 30         |              |              |
| <b>Total</b>        | <b>164 (43.2%)</b>     | <b>215 (56.8%)</b>    | <b>380</b> | <b>1.430</b> | <b>0.489</b> |

Although slight variations were observed across educational categories, with women of primary education showing a higher proportion of private clinic deliveries (61.5%) compared to other groups, these differences were not statistically meaningful.

Table 7

**Association Between Household Monthly Income and Perception of Hospital Fees Affecting Maternal Health Care Seeking** The results indicate that there was **no statistically significant association** between household monthly income and perception of hospital fees as a barrier to maternal healthcare seeking ( $\chi^2 = 1.292$ ,  $p = 0.731$ ), which is illustrated in Table 7.

| Household Monthly Income (USD) | Yes, n (%)        | No, n (%)          | Total      | $\chi^2$         | p-value      |
|--------------------------------|-------------------|--------------------|------------|------------------|--------------|
| \$50 – \$100                   | 55 (23.7%)        | 177 (76.3%)        | 232        |                  |              |
| \$101 – \$150                  | 24 (20.5%)        | 93 (79.5%)         | 117        |                  |              |
| \$151 – \$200                  | 6 (23.1%)         | 20 (76.9%)         | 26         |                  |              |
| Above \$200                    | 2 (40.0%)         | 3 (60.0%)          | 5          |                  |              |
| <b>Total</b>                   | <b>87 (22.9%)</b> | <b>293 (77.1%)</b> | <b>380</b> | <b>1.292 (3)</b> | <b>0.731</b> |

Although minor variations were observed across income groups, the proportion of respondents reporting that hospital fees affected care-seeking was generally similar across all income categories.

## MULTIVARIATE ANALYSIS

Table 8

**Binary Logistic Regression for Predictors of ANC Attendance** The results of the multivariable binary logistic regression analysis for predictors of antenatal care (ANC) attendance. None of the variables were statistically significant predictors of ANC utilization (all  $p > 0.05$ ), and all 95% confidence intervals included unity. As Table 8 presents.

| Variable                              | AOR   | 95% CI      | p-value |
|---------------------------------------|-------|-------------|---------|
| Age                                   | 0.855 | 0.620–1.180 | 0.342   |
| Marital status                        | 0.995 | 0.554–1.787 | 0.987   |
| Education level                       | 1.174 | 0.780–1.768 | 0.442   |
| Household income                      | 1.064 | 0.726–1.559 | 0.749   |
| Duration of stay in IDP camp          | 0.948 | 0.672–1.339 | 0.763   |
| Hospital fee affordability            | 0.927 | 0.481–1.786 | 0.820   |
| Hospital fees preventing care seeking | 0.674 | 0.328–1.386 | 0.284   |
| Delay in hospital visits due to cost  | 1.040 | 0.556–1.947 | 0.902   |

Although not significant, age (AOR = 0.855), duration of stay in IDP camp (AOR = 0.948), hospital fee affordability (AOR = 0.927), and hospital fees preventing care seeking (AOR = 0.674) showed a tendency

towards reduced odds of ANC attendance, while education level (AOR = 1.174) and delay in hospital visits due to cost (AOR = 1.040) showed a slight positive association.

Table 9

**Binary Logistic Regression for Predictors of Skilled Birth Attendance** The results of the multivariable binary logistic regression analysis for predictors of skilled birth attendance. Duration of stay in IDP camps was significantly associated with skilled birth attendance (AOR = 1.863, 95% CI: 1.195–2.905, p = 0.006), indicating increased odds of skilled delivery among women with longer duration of displacement. As Table 9 shows.

| Variable                                                   | AOR   | 95% CI (Lower – Upper) | p-value |
|------------------------------------------------------------|-------|------------------------|---------|
| Age                                                        | 1.252 | 0.869–1.806            | 0.228   |
| Marital status                                             | 1.056 | 0.544–2.048            | 0.873   |
| Education level                                            | 1.095 | 0.690–1.736            | 0.701   |
| Household income                                           | 0.879 | 0.558–1.385            | 0.579   |
| Duration of stay in IDP camp                               | 1.863 | 1.195–2.905            | 0.006   |
| Hospital fee affordability                                 | 0.207 | 0.112–0.385            | < 0.001 |
| Hospital fees affect decision to seek maternal health care | 0.847 | 0.422–1.702            | 0.641   |

Hospital fee affordability was also significantly associated with skilled birth attendance (AOR = 0.207, 95% CI: 0.112–0.385, p < 0.001), showing reduced odds of skilled delivery among women who could not afford hospital fees. All other variables, including age, marital status, education level, household income, and perceived financial influence on care seeking, were not statistically significant predictors of skilled birth attendance (p > 0.05).

## 4. Discussion

This study assessed the impact of public hospital fees on maternal and child healthcare utilization among internally displaced persons (IDPs) in Garasbaaley District, Mogadishu, Somalia. The findings show that hospital fees significantly affect skilled birth attendance, while no significant associations were observed with antenatal care (ANC), postnatal care (PNC), or child immunization.

Hospital fee affordability was significantly associated with skilled birth attendance, with women unable to afford fees being less likely to utilize skilled delivery services. This aligns with evidence from other low-income and humanitarian settings where out-of-pocket payments reduce access to facility-based delivery services (WHO, 2024; World Bank, 2024).

Duration of stay in IDP camps was positively associated with skilled birth attendance, suggesting that longer displacement may improve exposure to health services, humanitarian programs, and maternal health outreach activities.

In contrast, ANC, PNC, and immunization were not significantly associated with hospital fees or socio-demographic factors, likely due to the availability of outreach services, subsidies, and routine immunization programs in IDP settings.

Overall, the findings indicate that financial barriers remain a key determinant of skilled birth attendance among IDPs, while humanitarian health interventions may help maintain access to other essential maternal and child health services.

## 5. Conclusion

This study concludes that public hospital fees are a significant determinant of skilled birth attendance among internally displaced women in Garasbaaley District, Mogadishu, Somalia. Women who were unable to afford hospital fees were significantly less likely to utilize skilled delivery services, indicating that out-of-pocket payments remain a key barrier to facility-based childbirth in this setting.

In contrast, no statistically significant associations were observed between hospital fees and antenatal care (ANC), postnatal care (PNC), or child immunization services, suggesting that these services may be partially protected through humanitarian support and outreach programs in IDP settlements.

Overall, the findings highlight that financial barriers disproportionately affect access to skilled delivery care compared to other maternal and child health services. Strengthening financial risk protection mechanisms—such as fee exemptions, targeted subsidies, and expanded maternal health financing—remains essential to improving equitable access to safe delivery services and reducing preventable maternal and neonatal morbidity and mortality in humanitarian contexts.

## 6. Recommendations

Based on the findings of this study, the following recommendations are made:

1. Strengthen and enforce fee exemption policies for pregnant women and internally displaced persons (IDPs) to reduce financial barriers to skilled birth attendance.
2. Expand maternal health financing strategies, including vouchers, targeted subsidies, and health insurance schemes for vulnerable IDP populations.
3. Improve access to maternal and child health services within IDP settlements through mobile clinics and strengthened community outreach programs.
4. Enhance health education and awareness through community health workers to promote early and appropriate utilization of maternal healthcare services.
5. Strengthen coordination between government authorities and humanitarian organizations to ensure sustainable financing and equitable delivery of maternal and child health services.

## Declarations

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

Ethical approval for this study was obtained from **Al Hayat Medical University Research Ethics Committee**. Written informed consent was obtained from all participants before enrolment. For participants younger than 16 years of age, written informed consent was obtained from their parents or legal guardians prior to participation. All study procedures were conducted in accordance with the Declaration of Helsinki.

## **Consent for publication**

Not applicable.

## **Availability of data and materials**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## **Authors' contributions**

FAS conceived and designed the study, supervised data collection, performed the statistical analysis, and drafted the manuscript. AMH contributed to the study design, interpretation of findings, and critical revision of the manuscript. YAM contributed to data analysis, interpretation of results, manuscript preparation, and critical review. MII participated in data collection, data validation, and manuscript revision. BAG contributed to data management, literature review, and manuscript editing. All authors read and approved the final manuscript.

## **Competing interests**

The authors declare that they have no competing interests.

## **Funding**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## **Authors' contributions**

FAS and AMH conceived the study and designed the methodology. YAM and MII supervised the field data collection in the Garasbaaley district. BAG and FAS performed the statistical analysis and data interpretation. FAS drafted the manuscript. AMH, YAM, MII, and BAG critically revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

## **Acknowledgements**

Not applicable.

## Clinical trial number

Clinical trial number: not applicable.

## References

1. United Nations. Transforming our world: the 2030 Agenda for Sustainable Development. New York: United Nations; 2015.
2. World Health Organization. Universal health coverage: key facts. Geneva: World Health Organization; 2023.
3. World Health Organization. World Bank. Tracking universal health coverage: 2023 global monitoring report. Geneva: WHO; 2023.
4. Wagstaff A, Flores G, Hsu J, Smitz MF, Chepynoga K, Buisman LR, et al. Progress on catastrophic health spending in 133 countries: a retrospective observational study. *Lancet Glob Health*. 2018;6(2):e169–79.
5. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva: WHO; 2016.
6. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health*. 2014;2(6):e323–33.
7. World Health Organization. Immunization coverage. Geneva: WHO; 2023.
8. Gavi, the Vaccine Alliance. The impact of immunization on child health and development. Geneva: Gavi; 2022.
9. Federal Government of Somalia. Ministry of Health and Human Services. Somalia Health Sector Strategic Plan 2022–2026. Mogadishu: Ministry of Health; 2022.
10. United Nations High Commissioner for Refugees (UNHCR). Somalia displacement and humanitarian situation report. Geneva: UNHCR; 2023.
11. Kruk ME, Gage AD, Arsenault C, Jordan K, Leslie HH, Roder-DeWan S, et al. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *Lancet Glob Health*. 2018;6(11):e1196–252.
12. Barasa EW, Maina T, Ravishankar N. Assessing the impoverishing effects and factors associated with the incidence of catastrophic health expenditures in Kenya. *Int J Equity Health*. 2017;16:31.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [QUESTIONNAIREIDPS.pdf](#)