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Community health volunteers' performance in rural areas of Yemen: a community-based satisfaction survey

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Abstract

Objectives: Many developing countries utilize the services of community health volunteers (CHVs) to enhance healthcare services in underserved regions. Evaluating client satisfaction with CHVs' performance is crucial for ensuring the effective utilization of their services. This study aims to assess clients' satisfaction with the provision of basic reproductive health services by CHVs in the governorates of Ibb and Al Mahweet, Yemen.

Materials and Methods: A cross-sectional study was conducted, collecting data via structured questionnaires administered by trained data collectors to clients of CHVs. A total of 510 households were interviewed, with 255 from each governorate, distributed across 30 clusters (villages). Each governorate comprised 15 clusters in 12 districts (six districts in Ibb and five in Al Mahweet, excluding one district for security reasons). Within each cluster, 17 households were randomly selected for interviews. Descriptive analysis was performed using the SPSS version 22.

Results: The majority of the clients were female (84.7%), most were aged 20–39 years (55.7%), and more than half of them had received at least primary education (54.2%). The study findings indicate that a significant proportion of respondents were highly satisfied with CHVs' performance (93%). Almost all respondents confirmed that CHVs resided in their villages (94%) and were easily accessible for consultation (99%). Most of the respondents (97%) expressed trust in the CHVs, stating that they were helpful to all villagers and treated them well. Additionally, nearly all the respondents reported easy access to services (98.6%), although a considerable percentage experienced a gap of three months or more since their last interaction with a CHV (39.1%).

Conclusion: The CHVs contribute to the well-being of the rural populations in Yemen by delivering satisfactory services, particularly regarding family planning. However, ensuring the sustainability of the CHV programs remains a challenge, which requires attention from the program managers and decision makers in the Yemeni healthcare sector.

Key words: community health volunteers, reproductive health, family planning, rural health, Yemen

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Introduction

Measuring users' satisfaction with hospital and clinical management has become a key focus globally. Patients are indeed the most critical stakeholders in the healthcare industry. Thus, understanding their needs and expectations has become pivotal for healthcare providers[1]. Realizing the disparity between patients' expectations and the actual services received is crucial in improving healthcare delivery. This contrast, often termed as the "service gap", highlights the difference between what patients anticipate and what they experience in terms of healthcare services[2, 3]. Once these gaps are identified, healthcare providers can take targeted actions to bridge them. This might involve staff training programs to improve communication skills, optimizing scheduling systems to reduce wait times, implementing new technology for better patient engagement, or redesigning

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processes to enhance overall efficiency and effectiveness[2]. Additionally, the level of patient satisfaction significantly impacts various aspects of healthcare beyond the immediate care provided. It plays a pivotal role in shaping patient behavior and their engagement with healthcare services. A positive experience often encourages patients to seek medical advice promptly. Satisfied patients are more likely to reach out to healthcare providers when they encounter health issues, leading to earlier diagnosis and intervention. Also, patient satisfaction is closely tied to treatment adherence. When patients are content with their healthcare experiences, they are more inclined to follow prescribed treatments, take medications as instructed, and adhere to lifestyle changes recommended by healthcare practitioners. This adherence significantly influences the effectiveness of treatments and contributes to better health outcomes. Moreover, patients who are satisfied with their interactions are more likely to maintain an ongoing relationship with their practitioners. This continuity of care enables better monitoring of health conditions, more effective preventive care, and a deeper understanding of the patient's overall health history, leading to better-informed treatment decisions. Understanding these connections between satisfaction and patient behavior underscores the importance of not only providing quality medical care but also ensuring a positive overall experience. It emphasizes the need for healthcare providers to focus on patient-centered care, effective communication, and building strong, trusting relationships with patients [2, 4, 5]. Moreover, individuals have the right to be involved in the healthcare provided to them and should be encouraged to do so.

Yemen's healthcare system indeed grapples with multifaceted challenges, making it difficult to enhance the quality and accessibility of healthcare services. The situation is compounded by several issues such as health-related problems stemming from conflicts, limited public funding, a severe shortage of healthcare professionals, and fragmented healthcare systems[6–8]. The cumulative effect of these challenges has resulted in inadequate healthcare provision, especially affecting women residing in rural and mountainous regions. Their access to quality healthcare services is significantly constrained due to the geographical barriers, lack of resources, and often, cultural or societal factors that further limit their healthcare options[7, 9, 10]. Therefore, the Yemeni-German Health System Strengthening Project (HSSP) has been implemented in Yemen. It is supported by the Government of German (BMZ) to improve access to a package of needs-driven, quality-assured primary healthcare services. Additionally, it aims to increase awareness regarding and trust toward the healthcare services provided, as well as reduce travel-time and costs for residents of remote areas by bringing services closer to them[11]. This project was supported by the local volunteers of the community-based reproductive health promotion project to enhance the provision of basic healthcare services in rural areas. Working in collaboration with healthcare facilities in rural areas, these volunteers were responsible for providing basic healthcare education services encompassing family planning, antenatal care, skilled birth attendance, and nutrition services—nutrition for children under five years, pregnant mothers, and breast-feeding mothers. Additionally, they were responsible for distributing modern contraceptives such as condoms and oral contraceptive tablets. The service package for the volunteers was defined by the endeavor of the Ministry of Public Health and Population (MoPHP) to expand reproductive health services in rural areas via volunteering platforms and is part of the adopted minimum service package for the humanitarian situation in Yemen[11].

The strategy of recruiting local Community Health Volunteers (CHVs), who are trained to provide healthcare services in their communities, has been adopted in many developing countries to address the lack of healthcare workers[12–16]. Additionally, it can help deliver culturally sensitive health messages, empower individuals to make informed decisions, and improve access to life-saving curative measures[17–19]. The adoption of the HSSP for the CHVs at the community level did not aim to substitute the conventional health services offered by first-line healthcare facilities, but to complement them in remote communities. Clients' satisfaction level regarding the performance of the CHVs is critical to ascertain and document lessons from this project. The total number CHVs was 160 in both governorates: Ibb—29 males and 31 females; Al Mahweet—50 males and 50 females. The main tasks of the CHVs include distribution of family planning tools (Microgenon, Microlot, condom, etc.) and providing awareness sessions regarding the significance of family planning, antenatal care, child delivery in healthcare facilities, appropriate nutrition for mothers and children, and issues associated with early marriage[11].

This study intends to assess clients' satisfaction level with the performance of CHVs in providing the assigned basic healthcare services in the governorates of Ibb and Al Mahweet in Yemen. Specifically, it aims to assess the availability of CHVs services, clients' trust in CHVs' knowledge, and community accessibility to these services. The findings of this study would aid the MoPHP improve CHVs programs and service utilization among rural communities in the Ibb and al Mahweet governorates.

Methods

Setting

Yemen is divided administratively into 22 governorates. Each governorate is further divided into a number of districts and has its own local health office, which reports to the MoPHP. The most recent Yemen Demographic and Health Survey (DHS) indicated that approximately 70% of

the Yemeni population resides in rural areas. This statistic highlights the significant portion of the population living outside urban centers, facing potential challenges in accessing adequate healthcare services due to geographical remoteness, limited infrastructure, and fewer resources[20]. A cross-sectional descriptive study was conducted in the Ibb and Al-Mahweet governorates during September 2018. These two governorates were selected for this research since they had implemented the Health Sector Support Program (HSSP) and were relatively more stable amid the ongoing conflict in Yemen. Choosing these governorates for research allowed for a study within a context where health initiatives were already underway and where safety concerns were relatively lesser compared to other conflict-affected regions in the country.

Study population

The study population included the villages targeted by the CHVs who were supported by the HSSP. The total survey population size in both governorates comprised 63,344 individuals. Of these, 37,349 were from the Ibb governorate, covered by 60 CHVs across 30 villages and six districts: Al-Sibra, Jebla, Reef Ibb, Hubaish, Al Makhader, and Al Sayani. The remaining 25,995 individuals were from the Al-Mahweet governorate. They were covered by 148 CHVs across 78 villages and six districts: Al Mahweet City, Jabal Al-Mahweet, Al-Rujom, Al-Khabt, Shibam, and Bani Sa'ad.

Interviews were conducted with 510 households: 255 in each governorate, distributed over 30 clusters (village/quarter). Each governorate comprised 15 clusters in 12 districts: six districts each in Ibb and Al Mahweet. One district in Al Mahweet was excluded because of security reasons, resulting in a total of 11 districts covered in this study.

Sampling

For each governorate, sample-size determination required the production of reliable approximation for the survey. The research team applied the MURRAY-R 1998 formula to determine the sample size for each governorate. The sample size, "n" was determined as follows:

$$n = \frac{Z^2 . p . q}{d^2}$$

Where,

Z = the value in normal curve corresponding to the level of confidence 95% = 1.96
p = the probability prevalence in the community
q = (1- p)
d is the margin of error (± Desired precision) = 0.05

The resulting sample size was 246 in each governorate. Thereafter, nine households were added to the sample of each governorate to avoid any loss of unit during the data cleaning process. The total size of the sample from the two governorate was 510 households: 255 in each. Each governorate comprised 15 clusters of 17 households each. A cluster is defined as the smallest administrative unit (village/quarter) located among the villages targeted by the HSSP and CHVs.

Cluster sampling strategy

The sampling frame was drawn from the CHVs catchment areas in the two governorates: Ibb—six districts; Al-Mahweet—five districts. The sampling was conducted in two stages.

First stage: It included the cluster-selection process. Cluster sampling was applied because the population has a sparse and unstructured distribution of households. Proportional probability sample based on population size was utilized for selecting 15 clusters in each governorate.

Second stage: Sampled households within the selected cluster—17 households in each cluster—were randomly selected based on the simple random sampling method. This involved the following two steps: 1) preparation of an updated list of households in the village by the team heads and the village leader; and 2) random selection of 17 households from the list of households.

Data collection

Data were collected via face-to-face interviews with male and female householders. The data-collection tool was a close-ended questionnaire. It recorded participants' demographic information and satisfaction with CHVs' performance in terms of the availability and accessibility of basic healthcare services. The data were collected by qualified, trained teams which had previously conducted interviews in similar surveys. There were five field teams, each comprising a head and two female researchers; additionally, there was a five-member data-entry team. Before the actual survey, the teams were trained for two days on theoretical and practical aspects; pilot field visits were also conducted. The training mainly focused on the cluster sampling method, questionnaire, field work procedures, duties and responsibilities, and quality assurance mechanisms.

Data processing and analysis

Completed questionnaires were thoroughly reviewed and then entered a Microsoft Excel database. This database was likely structured based on the design of the questionnaire, ensuring a systematic and organized arrangement of data. Thereafter, the data were verified and sorted out in the field, which implies that some verifications have occurred while researchers were still in the study location (Ibb and Al-Mahweet governorates). This on-site sorting aimed to refine the dataset further before formal analysis using the SPSS (IBM Corp. Released 2016. IBM SPSS Statistics for

Windows, Version 24.0. Armonk, NY, USA). Finally, the questionnaire data were descriptively analyzed by the research team to assess clients' satisfaction with the performance of the CHVs in terms of availability and accessibility.

Results

Table 1 presents an overview of the respondents' sociodemographic characteristics. The majority of them (84.7%) were females, of which most were in the 20–39 years age group (55.7%). Approximately half of the female participants (46%) had not received formal education; 48% had received below-secondary school level education; and only 5.5% had received university education.

Volunteers' availability and accessibility

Table 2 shows that all interviewees claimed that the CHVs were available and accessible in their villages. This could be because the majority of the CHVs (93.9%) reside in villages. Additionally, the majority of the respondents (99%) emphasized that they could meet any CHV when they needed the services, mostly in the village (95%), while (5%) could meet them outside the village. Approximately half of the interviewees could meet the volunteers in a private place (client's/volunteer's house), whereas 32% could meet them at a public place (social occasions/mosques). A few interviewees (19.8%) indicated that they could meet the volunteers at either a public or private place.

As shown in Table 3, overall, 24.6% of the respondents had met a volunteer (to receive the service) within 30 days from the date of the interview: 32.9% in Al Mahweet; 16.2% in Ibb. Furthermore, 36.4% of the respondents indicated that their last meeting with a CHV was within three months from the date of the interview: 42.1% in Al Mahweet; 30.8% in Ibb. A total of 23.4% of the participants stated that the last time they were able to meet a CHV was more than 10 months from the date of the interview: 31.3% Al Mahweet; 15.4% in Ibb.

Services and information provided by the volunteers in the village

The study results indicated that the respondents received many services provided by the volunteers, including awareness sessions on family planning (spacing of pregnancies) (98%); sessions on antenatal care and delivery (84%); sessions on safe nutrition for mothers and children (83.5%); and 77% of the respondents indicated they received educational sessions on early marriage (Table 4).

A significant majority (96%) stated that the CHVs possessed sufficient knowledge about basic healthcare services. Again, significant majority (97%) stated that they trusted the information provided by the volunteers (Table 5).

Table 1 Sociodemographic characteristics of the study population

Demographics data		Governorate					
		Ibb		Al-Mahweet		Total	
		No.	%	No.	%	No.	%
Gender	Male	42	16.5%	36	14.1%	78	15.3%
	Female	213	83.5%	219	85.9%	432	84.7%
	Total	255	100.0%	255	100.0%	510	100.0%
Age categories	<20	12	4.7%	11	4.3%	23	4.5%
	20–29	107	42.0%	104	40.8%	211	41.4%
	30–39	86	33.7%	96	37.6%	182	35.7%
	40–49	41	16.1%	38	14.9%	79	15.5%
	50+	9	3.5%	6	2.4%	15	2.9%
	Total	255	100.0%	255	100.0%	510	100.0%
Marital status	Married	228	89.4%	244	95.7%	472	92.5%
	Divorced	5	2.0%	2	0.8%	7	1.4%
	Widow	3	1.2%	2	0.8%	5	1.0%
	Single	19	7.5%	7	2.7%	26	5.1%
	Total	255	100.0%	255	100.0%	510	100.0%
Education level	Illiterate	98	38.4%	76	29.8%	174	34.1%
	Can read and write	33	12.9%	27	10.6%	60	11.8%
	Primary school	92	36.1%	71	27.8%	163	32.0%
	Secondary school	24	9.4%	61	23.9%	85	16.7%
	University degree	8	3.1%	20	7.8%	28	5.5%
	Total	255	100.0%	255	100.0%	510	100.0%

Table 2 Volunteers' availability and their place of residence and meetings by governorate

Availability and residence of volunteers		Governorate					
		Ibb		Al-Mahweet		Total	
		No.	%	No.	%	No.	%
Availability of volunteers in the village	Present	255	100.0%	255	100.0%	510	100.0%
	Absent	0	0.0%	0	0.0%	0	0.0%
	Total	255	100.0%	255	100.0%	510	100.0%
Volunteers' place of residence	Inside the village	238	93.3%	241	94.5%	479	93.9%
	Outside the village	17	6.7%	14	5.5%	31	6.1%
	Total	255	100.0%	255	100.0%	510	100.0%
Villagers can meet the CHVs for service	Yes	252	98.8%	253	99.2%	505	99.0%
	No	3	1.2%	2	0.8%	5	1.0%
	Total	255	100.0%	255	100.0%	510	100.0%
Place of service	Inside the village	234	92.9%	245	96.8%	479	94.9%
	Outside the village	18	7.1%	8	3.2%	26	5.1%
	Total	252	100.0%	253	100.0%	505	100.0%
Place of the meeting	Private place	99	42.3%	134	54.7%	233	48.6%
	Public place	88	37.6%	63	25.7%	151	31.5%
	Both	47	20.1%	48	19.6%	95	19.8%
	Total	234	100.0%	245	100.0%	479	100.0%

CHVs: community health volunteers.

Table 3 Last time respondents have met the community health volunteers (CHVs)

The last time meeting with the volunteer	Governorate					
	Ibb		Al-Mahweet		Total	
	No.	%	No.	%	No.	%
Less than 1 month	83	32.9%	41	16.2%	124	24.6%
1–3 months	106	42.1%	78	30.8%	184	36.4%
4–6 months	20	7.9%	44	17.4%	64	12.7%
7–9 months	4	1.6%	11	4.3%	15	3.0%
10–12 months	23	9.1%	28	11.1%	51	10.1%
more than 12 months	16	6.3%	51	20.2%	67	13.3%
Total	252	100.0%	253	100.0%	505	100.0%

Accessibility to and satisfaction with healthcare services provided by the CHVs

Figure 1 illustrates that a sizeable majority of the respondents (95%) opined that the services provided by the CHVs were easily accessible and that the volunteers treated them well (96%) (Figure 2).

Figure 3 reveals that according to most respondents (97%), the volunteers were totally helpful. This indicates a high satisfaction level with the volunteers' performance in the village (93%).

Discussion

Yemen faces a significant challenge in producing and recruiting healthcare workforce to deliver healthcare services, especially in rural areas[8, 9, 21]. The World Health Organization (WHO) has indicated that the paucity of human resources for healthcare services is a major constraint to attaining the sustainable development goals[22–24]. Therefore, in many low-income and developing countries, the recruitment of CHVs to support the delivery of healthcare services has become an established approach, especially in underserved areas were health inequalities are high because of the lack of trained healthcare professionals[12–14, 25]. However, it is also significant to assess the satisfaction level of beneficiaries with the performance of the CHVs, as high patients/clients satisfaction has a positive impact on health seeking behavior, treatment, and compliance[2]. The role of the CHVs in healthcare services provision is expanding worldwide, especially in terms of improving access to healthcare at the

Table 4 Community health volunteer (CHV) services provided to the respondents

Services		Governorate					
		Ibb		Al-Mahweet		Total	
		No.	%	No.	%	No.	%
Information related to problems of early marriage endangering girls	Yes	222	87.1%	170	66.7%	392	76.9%
	No	33	12.9%	85	33.3%	118	23.1%
	Total	255	100.0%	255	100.0%	510	100.0%
Information related to maternity	Yes	231	90.6%	199	78.0%	430	84.3%
	No	24	9.4%	56	22.0%	80	15.7%
	Total	255	100.0%	255	100.0%	510	100.0%
Information related to giving birth at health facilities	Yes	231	90.6%	199	78.0%	430	84.3%
	No	24	9.4%	56	22.0%	80	15.7%
	Total	255	100.0%	255	100.0%	510	100.0%
Information related to good nutrition practices for mothers and children	Yes	232	91.0%	194	76.1%	426	83.5%
	No	23	9.0%	61	23.9%	84	16.5%
	Total	255	100.0%	255	100.0%	510	100.0%
Information related to family planning (contraceptives)	Yes	250	98.0%	251	98.4%	501	98.2%
	No	5	2.0%	4	1.6%	9	1.8%
	Total	255	100.0%	255	100.0%	510	100.0%

Table 5 Clients' perspectives on community health volunteers (CHVs)' knowledge, information, and usefulness

Client's Perspectives		Governorate					
		Ibb		Al-Mahweet		Total	
		No.	%	No.	%	No.	%
CHVs' knowledge about basic health services is sufficient	Yes	243	95.3%	243	95.3%	488	95.7%
	No	12	4.7%	12	4.7%	22	4.3%
	Total	255	100.0%	255	100.0%	510	100.0%
Client's trust in CHVs' information	Yes	247	96.9%	247	96.9%	494	96.9%
	No	8	3.1%	8	3.1%	16	3.1%
	Total	255	100.0%	255	100.00%	510	100.0%
The CHVs were useful for villagers	Yes	250	98.0%	245	96.1%	495	97.1%
	No	5	2.0%	10	3.9%	15	2.9%
	Total	255	100.0%	255	100.0%	510	100.0%

community level[26] and in reducing neonatal mortality and child and maternal morbidities[27, 28]. In Yemen, the history of volunteering is well-rooted in the community and holds a significant place within the community's ethos and history. Over time, this spirit of volunteerism has become deeply ingrained in Yemeni society, showcasing a strong commitment to communal well-being and support. The Ministry of Public Health and Population (MoPHP) in Yemen has recognized and leveraged this longstanding tradition of volunteerism by actively engaging Community Health Volunteers (CHVs) in various crucial activities. These activities span across essential healthcare domains such as reproductive health, nutrition, health education, and community mobilization. The interest of the MoPHP regarding expanding the role of the CHVs in service delivery has expanded over the last two decades. However, knowledge about the quality of services delivered by the volunteers is scarce in the Yemeni context. To the best of our knowledge, this research is the first cross-sectional study to assess clients' satisfaction regarding CHVs' performance on providing minimal healthcare services in Yemen.

Overall, the findings of this study show that most respondents were satisfied with the CHVs' performance. Almost all respondents indicated that the CHVs were generally available and resided in their villages. Additionally, most respondents stated that the CHVs were helpful for all villagers and treated them well. Moreover, all respondents had an easy access to services. The findings reveal the significance of selecting volunteers from the same villages or areas in facilitating access to services and ensuring CHVs'

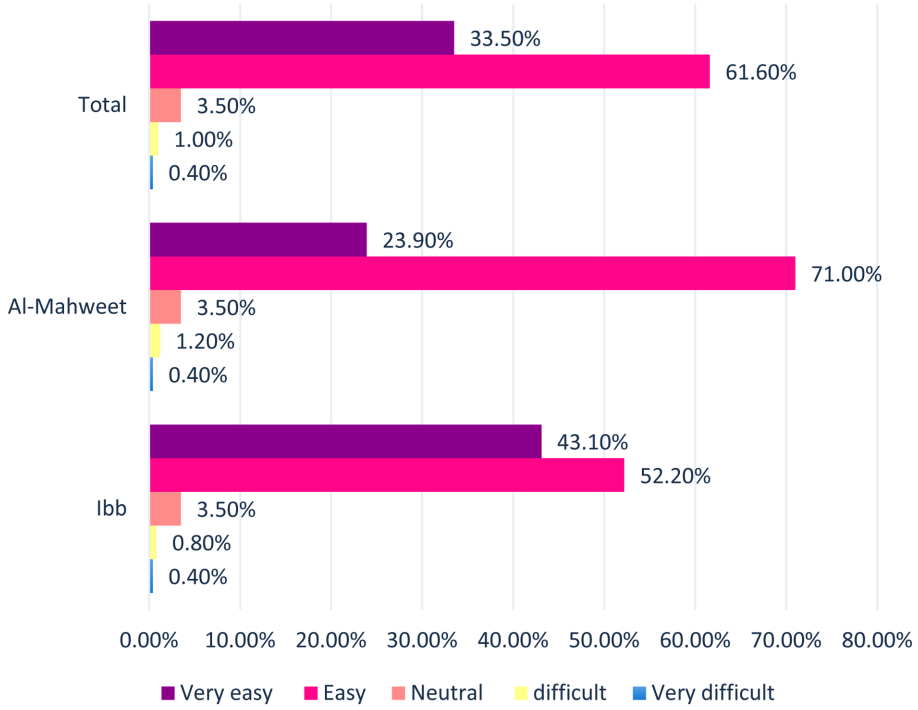

Figure 1 Clients' accessibility to community health volunteer (CHV) services.

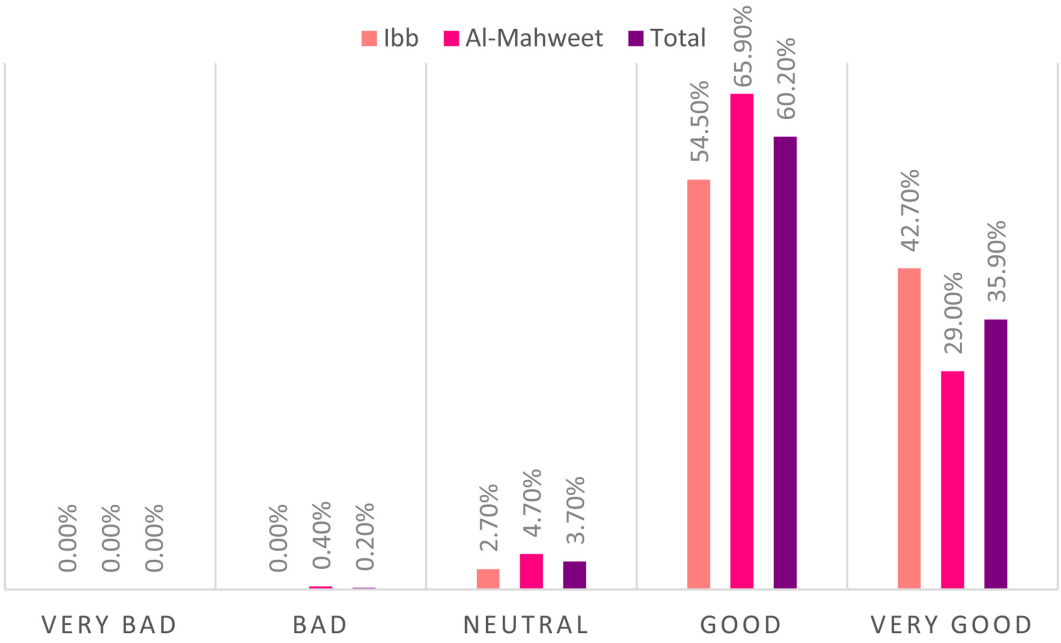

Figure 2 Clients' perspective on community health volunteers (CHVs)' treatment.

availability. The MoPHP policy has prioritized selecting Community Health Volunteers (CHVs) and other community-based healthcare workers based on their residency in the same areas where they operate. This strategy aims to enhance the effectiveness of healthcare services by ensuring that these volunteers live within the communities they serve[29]. As the majority of the CHVs resided in the same villages as the respondents, the availability of services reported by the latter was high. Moreover, it is assumed that the cost of travel to seek basic services has significantly reduced. Additionally, the opportunity cost of travel time is saved in favor of the local community, particularly women,

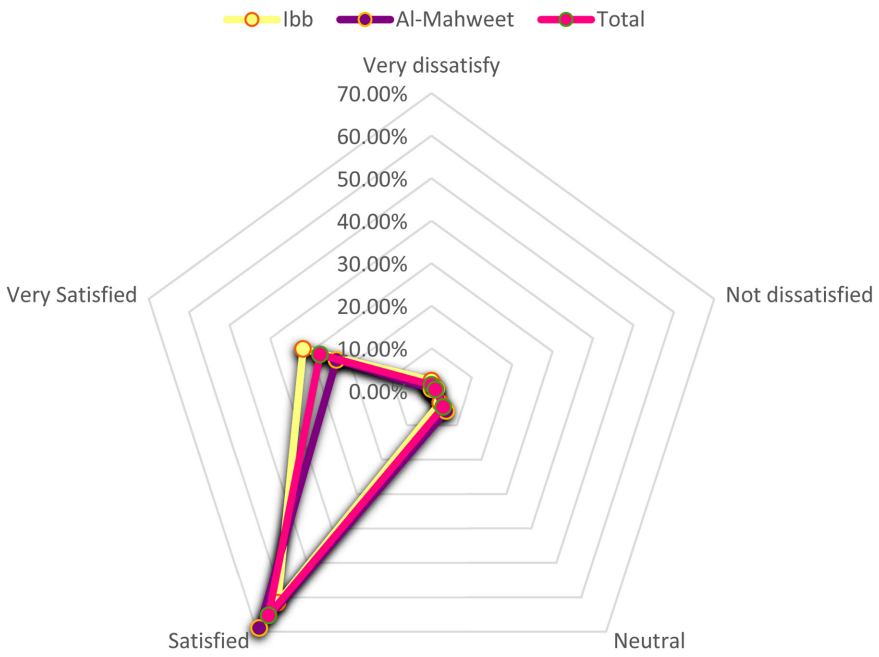

Figure 3 Clients' satisfaction with community health volunteers (CHVs)' performance.

who are, culturally, the main caretakers of children in rural Yemen. The proximity of CHVs to the respondents' villages likely contributed to high reported availability of services. This closeness can be advantageous, particularly in reducing the cost and effort associated with traveling to seek basic healthcare services. This is especially significant in regions where travel expenses and the opportunity cost of time are substantial burdens, particularly for women who often bear the responsibility of caring for children in rural Yemeni communities. However, while the study didn't specifically focus on assessing the extent to which these objectives were achieved, reports from studies within the Yemeni context suggest that women perceive public health facilities as offering services of poor quality. This perception contributes to the underutilization of maternal health services. Factors such as high costs, the absence of female physicians, and inadequate quality of medical supplies and equipment are cited as reasons for the reluctance of women to utilize these services[30]. This information underscores the complexity of healthcare challenges faced by women in rural Yemen. Despite the advantage of having local CHVs, the underlying issues related to the quality, accessibility, and affordability of healthcare services in public health facilities remain significant barriers to women seeking maternal and other essential healthcare services.

Generally, the villagers met the volunteers at the latter's house or in a public place (weddings, mosque, etc.). Regarding the last meeting with a CHV, approximately a quarter of the respondents indicated that it was within 30 days from the date of the interview. Furthermore, approximately one-third of the respondents had a CHV within three months from the date of the interview and approximately one-quarter stated that the last time they met a CHV was more than 10 months before the date of the interview. This result suggests that healthcare services have been disrupted in several villages for more than three months.

The clients confirmed receiving healthcare services, such as awareness sessions regarding family planning, contraceptives, antenatal care, delivery, mother and child nutrition as well as the negative effects of early marriage, especially on girls. The majority of the respondents indicted receiving family planning services, probably because the CHVs are recruited by a reproductive health-oriented project, and therefore, their mandate is established around this technical area. Additionally, it might be due to the fact that the project is significantly capacitated in areas of family planning and the CHVs have received additional refresher training in comparison to other program areas, such as nutrition. A possible reason for the high level of delivery of family planning services is the provision of supplies required by the community, which might motivate the CHVs to provide this "more tangible" services. Several studies have documented supplies as a facilitating factor for the CHVs to deliver services[31].

A vast majority of the participants perceived that the CHVs had sufficient knowledge of basic healthcare services, and most of them trusted the information provided by the CHVs. Our results indicate a high level of community acceptance and appreciation of the role of the CHVs and the services provided by them. The high satisfaction level of cli-

ents reflects that the CHVs provide services in rural areas and contribute to universal health coverage, especially for primary healthcare services, whenever they are enabled and supported with necessary tools and skills. The high quality of CHVs services is reflected by the high satisfaction rates of the interviewed clients. Studies from low-income countries confirmed such findings and inferences[31, 32].

Conclusion

The study suggests that the CHVs are instrumental in meeting the minimal and basic healthcare needs of rural populations in Yemen, especially of women of reproductive age. It evidences that their work is appreciated by the rural community, which was satisfied with the services and information received. The data indicate that the CHVs are extremely useful in delivering health promotion messages and improving access to family planning services in rural areas of Yemen. However, CHVs' sustainability and continuity of service provision is a key challenge. Expanding the scope of services that CHVs provide could be a strategic approach to enhance their involvement and retention in healthcare delivery. By exploring the potential for CHVs to offer a broader range of healthcare services, health planners aim to leverage their presence within communities and maximize their impact on improving health outcomes. Health planners must address these challenges and explore alternative options to ensure low attrition rates for the CHVs. The researchers call for further exploration of the possibility of engaging the CHVs to deliver a broader package of minimal services using simplified tools for mentoring and guidance. The findings suggest potential virtualization of the CHV service. Integration of the CHV services to encompass different programs and services at the community level is a priority and could motivate them to continue their service in case one program or project concludes. Program managers and planners are advised to further investigate the reasons for the abrupt discontinuation of CHV services in these areas.

Conflict of interest: The authors declare no conflicts of interest associated with this study.

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Ethics approval and consent to participate: An ethical and official approval was obtained from the Ministry of Public Health and Population of Yemen to conduct this study. Oral informed consent was obtained from respondents before the interviews. The confidentiality and anonymity of the participants were ensured.

Data availability statement: All anonymized data used in this study are included in the text.

Author contributions: All authors contributed to the conception and design of the study. The first draft of the manuscript was written by TM and RS. All authors commented on the manuscript. FD supervised and reviewed the manuscript. All authors have read and approved the final version of the manuscript.

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