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Community health workers (Behvarz) in primary health care: a qualitative inductive content analysis of challenges

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ABSTRACT

Background. Behvarzs are the backbone of primary healthcare services in the Iranian health system and play a key role in providing efficient, responsive, and equitable services at the first level of service provision. This study aimed to identify the challenges of Behvarzs to provide a perspective for policymakers and managers to help them formulate future programs to enhance the efficiency of the health system. **Methods.** Following a qualitative design, an inductive content analysis approach was used to analyse the data. The healthcare network of the Alborz province (Iran) was considered as the study context. A total of 27 interviews were conducted with policymakers, development managers, managers of Behavrz training centres, and Behvarz workers in 2020. All interviews were audio-taped and transcribed, followed by data analysis using MAXQDA ver. 10. **Results.** Five themes were identified: service provision (scope of services, ambiguity of roles, non-compliance with the referral system, the quality of data entry, quality of services), access to equipment (quantity, quality), administrative issues (macro planning, micro planning), training (appropriateness of information, quality of training, recruiting related staff), perceived equity and fairness (balance between workload, income, and benefits, job satisfaction, job promotion). **Conclusion.** Occupational challenges affect the performance of Behvarzs in responding to society's needs because they not only play a major role in the health system, but also contribute to addressing the communication gap between local communities and high-level institutions, leading to the alignment of policy implementation. Therefore, strategies that emphasise the role of Behvarzs should be followed to promote community engagement.

Keywords: Behvarz challenges, community health workers, health system, inductive content analysis, Iran, policymaker, primary healthcare services, qualitative study.

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Introduction

Improving access to health services is one of the critical goals of health systems, particularly for disadvantaged groups, in addition to reducing geographical inequality between rural and urban areas concerning health outcomes (Salehi Zalani *et al.* 2016). The Iranian healthcare system (IHS) has a nationwide network of public health services. This multi-tiered system contains three levels. Primary care centres serve as the first level, which refer patients to hospitals located in provincial capitals (this is the second tier). Tertiary hospitals in big cities form the third level (Mehrdad 2009). Primary care services are free for those living in rural areas, and the rural insurance fund covers all the costs. There are user fees associated with the other two levels, along with coverage by various medical insurance schemes. Primary healthcare services (PHC) are a central component of the IHS (Bitton *et al.* 2017), which was emphasised by the World Health Organization (WHO) in 1978 (Hatami *et al.* 2019). Since 1979, the IHS has paid particular attention to providing healthcare services in rural areas in addition to expanding the country's healthcare network (Abbaszadeh *et al.* 2013). A wide network comprising health houses and rural healthcare centres provides healthcare services in rural areas of the country (Sadrizadeh 2004). In most cases, health houses are the first point of contact for patients with the IHS, indicating its vital role in service provision.

Behvarzs are the backbone of service provision in health houses, which are affiliated with rural health centres (Shams *et al.* 2022*a*); hence, they are the first healthcare practitioners to have contact with the community (Shadpour 2000). In Farsi, beh indicates 'good' and varz means 'skill'.

Since 1988, several programs have been implemented to train non-physician staff, known as Behvarz, whoprovide healthcare services in health houses; these include Behdar training, public health soldiers, rural Behdar staff, the Selseleh program, and the Rezaeeye program (Hatami *et al.* 2019). Behvarzs are locally sourced community health workers (CHWs) with at least 12 years of general education (i.e. high school) and 2 years of training at Behvarz Training Centres (Shayan *et al.* 2018). Behvarzs receive a fixed salary from the IHS (Rahbar *et al.* 2020). A total of 17 635 health houses with 3095 Behvarzs were providing healthcare services in 2019 (Marashi *et al.* 2019), indicating one Behvarz, either male or female, per 1200 population. Behvarzs are responsible for, among other things, child and maternal health, family planning, providing a limited spectrum of interventions based on symptoms, sanitation (either at home or workplace), school hygiene, oral health, public health education, and nutrition promotion. Because the profiles of diseases change, the range of responsibilities were expanded for Behvarzs, particularly their contribution to the detection, management, follow up, and referral of communicable and non-communicable disease cases (Javanparast *et al.* 2011).

Other services are available at rural healthcare centres (Hatami *et al.* 2019). Although services provided by Behvarzs have significantly improved health outcomes of patients over the past four decades (Abbaszadeh *et al.* 2013), not enough attention is paid to their challenges. Hatami *et al.* (2019) determined a lack of needs assessments to revise training programs, high workload and performing activities that they are not trained for, weak financial and non-financial incentives, ignoring strengths, lack of sufficient attention to weaknesses, not using their capacities in rural councils, insufficient welfare facilities, non-systematic monitoring systems, and a lack of enough support to empower and train them, as the main challenges experienced by Behvarzs. Keshvari *et al.* (2016) also noted the ignoring of rights, workplace tension, high workload, unreasonable expectations, and burnout as the main challenges of Behvarzs. Likewise, Javanparast *et al.* (2011) reported high workloads and the lack of system support as the main barriers to the effective performance of CHWs. There is extensive evidence discussing the contribution of Behvarzs to the IHS. For instance, Javanparast *et al.* (2012) confirmed that communication with the rural population is based on trust and appropriate humanitarian behaviour with rural people, and that good health knowledge and skills are important factors for their successful relationships. And Basiri *et al.* (2019) noted that further educational for improving communication skills and self-efficacy could help CHWs to communicate better with the rural population. Similarly, Kebriaei and Moteghedi (2009) found that CHWs were satisfied with their work and were well-coordinated with their colleagues;however, they were unsatisfied with other factors such as payments and benefits. Because there have been so few studies investigating CHW challenges and barriers, this study aimed to identify the challenges faced by Behvarz staff working in the Alborz province of Iran.

Methods

Because of limited and fragmented knowledge about the CHW challenges, an inductive content analysis approach was used to achieve the study objectives. This approach contains three main phases: preparation, organising and reporting (Fig. 1).

Participants were selected using the purposive sampling technique. The Healthcare Network of Alborz province and its healthcare centres were considered as the study

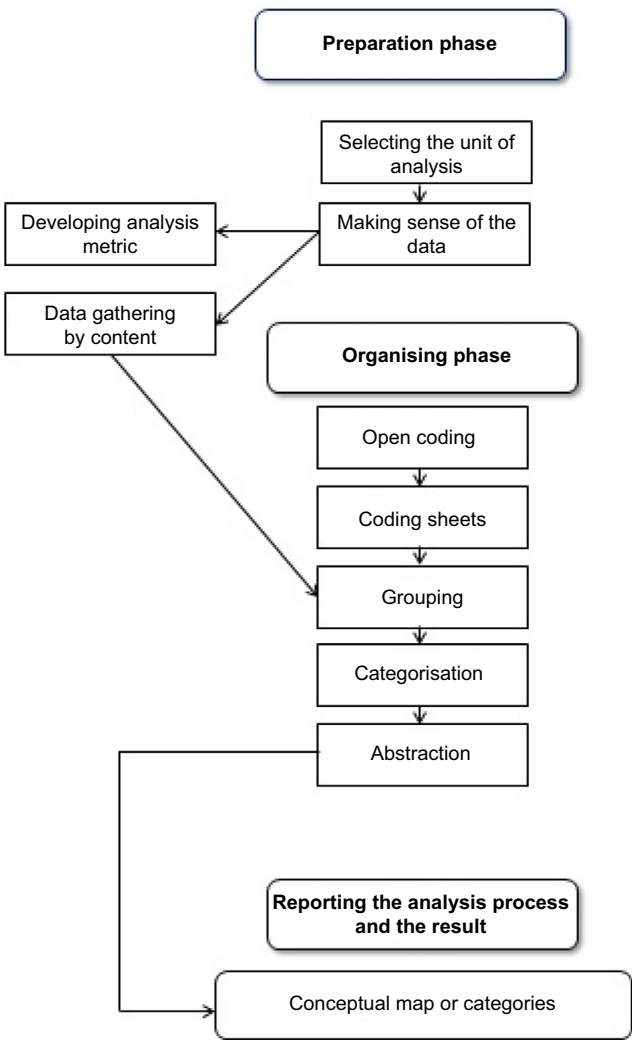

Fig. 1. Inductive content analysis process.

Table 1. Characteristics of the interviewees.

Job position	Education	Experience (years)
Directorate of Health Centres	MD	25
	MD	22
	MD	24
	MD	26
	MD	24
	BSc	27
Development managers	BSc	19
		26
		15
		23
		20
		25
Managers of Behavrz training centres	BSc	29
	MSc	22
Behvarz	Diploma	4
		6
		18
		15
		12
		8
		14
		9
		6
		5
		11
		17
		4

MD, Doctor of Medicine; BSc, Bachelor of Science; MSc, Master of Science.

population. Participants were selected among policymakers, development managers, managers of Behavrz training centres, and Behvarz in 2020 (Table 1). Fifty-nine percent of participants were women and 41% were men. The minimum and maximum age was 24 and 50 years, respectively. In addition, 118 CHWs were working in Alborz province, and there were 49 health houses covering 47 464 rural people.

Data collection

Data were collected using semi-structured interviews, with the main question of, 'in your opinion, what are the main challenges of Behvarzs?'. The sampling was stopped when data saturation was reached (n = 27). The interviews lasted from 40 to 60 min and were all audio-recorded and transcribed. Data analysis was conducted using MAXQDA ver. 10 (VERBI software).

Data analysis

As mentioned previously, data analysis was conducted following an inductive content analysis approach. All interviews were read repeatedly to achieve immersion and obtain a view of the bigger picture. The codes were extracted after determining common categories. Then, themes and subthemes were formed. Data analysis proceeded in parallel with the interviews. The scientific credibility of the qualitative data was assessed using the criteria of credibility, transferability, dependability, and conformability. Extended engagement, continuous observation, and member checks were considered to ensure credibility. To consider the transferability concern, a 'thick description' of the participants and an explanation of the research process were used. Research steps were considered throughout the study to show transparently (Moser and Korstjens 2018).

In this study, validity was evaluated by interviewees during interviews. And in addition to audio recording, field notes were also taken. It is worth noting that to reduce any potential error, the transcription was performed as soon as possible after the interview. Participants were selected from all areas where Behvarzs work to enhance the transferability of the sample. All interview stages were performed and recorded with precision to enhance reliability. In addition, the interview guide was reviewed and revised before being used to interview the participants. Confirmability of the interviews was evaluated by researchers after repeated reviews of transcripts and obtaining the approval from the head of a healthcare centre to avoid the potential impact of previous perceptions and attitudes of the research team on the results (Lincoln *et al.* 2011). All steps were performed by at least two authors separately.

The research purpose and methodology used were also subjected to scrutiny by the Research Ethics Committee of Shahid Beheshti University of Medical Sciences (code: IR.SBMU.SME.REC.1399033). Informed consent was obtained from all participants before entering the study and after a comprehensive introduction to the study protocol. In addition, all participants were ensured about confidentiality of their information, and they were informed that the recorded audio files would be deleted upon study completion.

Results

A total of 27 interviews were conducted with policymakers, development managers, managers of Behavrz training centres and Behvarzs (Table 1). On average, the work experience of participants was >15 years. Identified themes were as follows: service provision; access to equipment; administrative issues; training; and equity and fairness (Table 2). The views of the participants in the study were

Table 2. Identified themes and sub-themes related to the performance of Behvarzs.

Sub-themes	Codes
Service provision	Scope of services
	Ambiguity and conflict in the role
	Non-compliance with the referral system
	Quality of data entry
	Quality of services
Access to equipment	Quantity
	Quality
Administrative issues	Macro planning
	Micro planning
Training	Appropriateness of information
	Quality of training
	Recruiting relevant staff
Equity and fairness	Balance between workload, income, and benefits
	Job satisfaction
	Job promotion

consistent within the themes and sub-themes. Themes and sub-themes are discussed below.

Service provision

One of the identified themes was 'service provision', which is a basic and important concept for the performance of Behvarzs. Behvarzs admitted to facing challenges in providing services, which is evident in the following sub-themes (Javanparast *et al.* 2011).

Scope of services

Interviewees noted that all newly recruited Behvarz workers had a job description; however, factors including a lack of human resources across the health sector and financial restrictions led to new tasks being added, some of which the workers were not trained for.

> Initially, they asked Behvarz workers to do limited tasks, including vaccination, family planning, pregnancy and child care, and environmental health. However, they started to add several new tasks every year. (D15)

Ambiguity and conflict in the role

One of the most important challenges mentioned by Behvarzs is the emergence of new health needs of patients in their catchment area, which they are not trained to respond to.

> One of our problems is the need for psychological consultation for different age groups. Its absence has caused much tension in society; however, we are still focused on height and weighting of children. (D17)

Non-compliance with the referral system

The administrative staff believed that the willingness of patients to receive services provided by Behvarzs has declined. For example,

> Currently, health houses only provide primary services, and people are bored with their treatment procedures and prefer to refer to a physician to receive the first-line treatment. (A4)

Quality of data entry

Another important problem noted by Behvarzs and administrative officials was data entry. Although the information about the treated population has been entered into electronic information systems in recent years, paper - based forms are still used, which takes a lot of time to complete, and due to the high workload, it leads to decreased accuracy in data recording.

> There is no internet in satellite villages. Therefore, we record everything on paper to electronically record them next day, because we do not have laptops or tablets. This process is prone to information loss or mistakes. (D18)

In contrast, one of the main criterions to assess the performance of Behvarz workers is the rate of data entry into electronic systems. Hence, some Behvarz workers record services that are never provided to cover other problems, such as low referral.

> We had a special case that while the child was passed away a year ago, the Behvarz continued to record the height and weight because our system values quantity, rather than quality. (A5)

Quality of services

The interviewees believed that Behvarzs only provide services that can be registered in the electronic systems. This issue makes the provision of services more difficult, regardless of the real and unique conditions of each patient. As data entry is time-consuming, it may negatively affect service provision. The interviewees stated that the quality of care is affected by data entry in electronic information systems. Data entry is time-consuming in itself, and interviewees believed that health centres only provide services that can be registered in electronic systems because that information is used to evaluate the health house.

> We are an operator. During data entry, we are focused on the system, leading to ignoring necessary components of contacting the patient (e.g. eye contact, sitting next to the person, and empathizing). (D6)

Access to equipment

Access to, and quality of, equipment was another challenge noted by Behvarzs. These were categorised into two main parts.

Quantity

Behvarzs are faced with shortage of equipment, ranging from office equipment to medical supplies (e.g. drugs), forcing them to provide services using minimal equipment, which does not always prove to be successful.

> Those who are referring here expect to receive services that they need (e.g. contraceptives). However, we are in shortage of necessary equipment; hence, some of them should refer to a pharmacy to purchase the contraceptives and get me to do the injection. (D19)

Quality

Most Behvarzs stated that apart from the shortage of equipment, the quality of the accessible equipment is also not acceptable. In addition, in some cases, equipment look like they are second hand, particularly office equipment.

> They brought us a digital scale with gauge for more accuracy. But its quality was not good, and it worked for two or three months, and no one could fix it. Hence, we put it next to the rest of the scrapers. (D22)

Administrative issues

The interviewees believed that management and using Behvarzs to provide PHC services at both macro and micro levels involves another major problem, as noted below.

Macro planning

Interviewees stated that most of the problems reflected ever-changing policies. For instance, despite extensive efforts to implement a policy, in some cases, managerial turnover at the ministry level is often associated with changed policies.

> They develop a policy at the ministry level. Then, it receives considerable resources, either financial or human resources. However, when a high-level manager changes, it will be abandoned without no outcome. (A3)

Micro planning

The interviewees stated that due to the lack of human resources, health workers might have to provide services at more than one health centre, work in administrative positions, and provide services to a wider range of the population. Therefore, instead of focusing on population health and emphasising prevention, the Behvarzs provide simple medical services only when people demand it.

> In several areas, one Behvarz works at two or even three health houses. Therefore, s/he is not accountable for services provided in covered health houses. (F13)

Training

Training and using relevant human health resources were another identified challenge. The sub-themes are discussed below.

Appropriateness of information

The interviewees stated that as a result of the expansion of higher education all around the country, the education level of those living in rural areas has considerably increased. This meant that most young people have a bachelorette degree, and some in fields related to health. Therefore, in some cases, the health literacy of patients may be higher than that of the Behavarz workers; that is, Behvarzs cannot respond to their health needs.

> In some cases, our visitors are licensed nurses who ask for rectal or breast cancer screening referral; which they are more aware of that. (A4)

Quality of training

The interviewees believed that continuous education programs are not efficient, mainly due to inappropriate training methods; meanwhile, an effective continuous education program can increase the efficiency of Behvarzs, leading to enhanced health of communities.

> In most cases, it's just holding a class and sending a report to high-level officials. They do not care about the efficiency of programs. Whether it could enhance Behvarz's information and skills? (F13)

Recruiting relevant staff

The interviewees stated that Behvarz's recruitment policy is not based on their field of study. Therefore, in some cases, there is no proportionality between the high school field of study and the content of educational programs, which is a major challenge for the teachers of Behvarz educational centres. For instance, fields such as mathematics, literature, and human science do not have enough knowledge to continue studying in Behvarz training centres.

> Currently, all individuals with a Diploma can apply for Behvarz training programs. Logically, only those with a natural science diploma should apply. Hence, instructors have no option except to teach them the basics of natural science. (F 14)

Equity and fairness

Interviewees spoke about issues of inequity in the workplace, including in terms of inequitable pay and benefits, lack of

respect from others, and lack of opportunities for professional development and promotion.

Balance between workload, income, and benefits

Insufficient payment was an issue that Behvarzs and even officials mentioned as being problematic. Although Behvarzs are full-time staff members, their income is not proportionate to their duties and responsibilities.

> You know, life is much more expensive these days. How can I afford my bills with three million Toman?! They expect me to only work for them 24 hours a day! Who will pay my bills? (D24)

The interviewees stated that insufficient payment and imbalanced and inequitable payments negatively affect their performance and satisfaction with the healthcare provider employers.

> This is not fair. While I cover a higher proportion of people, my performance reward equals to one of my peers whose catchment population is half of mine. There is no overtime payment. (D26)

The interviewees stated that most of the services provided by the Ministry of Health and Medical Education (MoHME) are non-profit and that this Ministry cannot provide welfare services similar to other ministries (e.g. low interest loans). Lack of sufficient income resulted in insufficient welfare facilities for those working in the healthcare system.

> In comparison to several other ministries (e.g. the ministry of education), we are working for longer hours. However, I did not receive any low interest personal loan, such as loans provided to those working in other sectors. (D18)

> Those working in other sectors not only receive higher payments but also are entitled to several extra benefits, such as low cost travel facilities. Nevertheless, our organization has one or two hotels, with one star, only in Mashhad, with a long waiting list and lottery. (D25)

Job satisfaction

Most of the interviewees noted the inappropriate behaviour of officials towards Behvarzs, particularly the behaviour of experts in charge of evaluating their performance.

> They treat us like school children. They only do not use physical violence. Ok, I did something wrong, but it is not a good reason for rude behavior, particularly in front of visitors. (D19)

Interviewees stated that most Behvarzs complained of severe psychological stress, particularly regarding their expanded roles and the possibility of missing some cases and the sensitivities involved with their job; as frontline staff, their anxiety levels are higher than others.

> There are special committees for maternal mortality and under-five mortality. Every month I pray for the health of pregnant women and under-five children. Otherwise, if something bad happens, I have to go to court to prove I'm not guilty. (D25)

Job promotion

Interviewees stated that Behvarzs can only continue their education in a few fields, such as midwifery, public health, psychology, and nutrition. Meanwhile, other health staff are not faced with such barriers.

> We can continue our education in a few fields. It would be better to expand the allowed fields. (D26)

Discussion

Our study has indentified service provision, access to equipment, administrative issues, training, and equity and fairness as the main Behvarz challenges. Iran's PHC program is based on the Alma-Ata declaration statement, including health as a fundamental right and equity (World Health Organization 1978). PHC implementation in rural areas resulted in considerable improvements, including enhanced access to healthcare services and improved health outcomes (Kok *et al.* 2015). In addition, Behvarzs, as locally sourced CHWs, ensured downstream communication with local communities and upstream communication with higher levels of service provision (Sauerborn *et al.* 1989). Despite their considerable achievements, Behvarzs are faced with various challenges. Although, according to the findings, the number of services provided by Behvarzs is more expansive than their counterparts in other countries (World Health Organization 2016), interviewees noted the gradual increase of the services spectrum over time and not considering the needs of local communities when revising services. The lack of a value framework to govern the health system and the absence of managerial stability have led to the instability of policies in different periods (Shams *et al.* 2022*b*). Likewise, Kok *et al.* (2015) noted the broad range of services provided by Behvarzs. Salehi Zalani *et al.* (2016) mentioned the focus on infectious diseases. It seems that both the combination and number of services offered by Behvarzs should be revised.

One of the problems expressed by some participants was that the number of Behvarz is low. Each Behvarz should provide services to 400 people on average, which is in line with the criteria for establishing health centres (Tabatabaei Asl *et al.* 2018). It seems that due to lack of understanding of such a problem by the service providers, it is necessary to carry out Timing and Performance Calibration studies in

order to determine the exact number of required workforce participants.

The participants emphasised declined willingness to receive healthcare services from health houses, with a higher inclination towards physicians. Abbaszadeh *et al.* (2013) and Shafee Koranjik (2020) confirmed that in the age of communication and technology, which is accompanied by higher use of means of transport, distances are getting shorter and people refer to urban healthcare centres. The desire of young people to receive specialised services has become more evident to the point where most of the clients of rural healthcare centres are elderly and adults.

A study in Brazil found that CHWs may be invisible in both society and healthcare settings. People do not value consultations as much as medical procedures. This study also noted not engaging CHWs in decisions made by clinics (Abbaszadeh *et al.* 2013). A study conducted in Burkina Faso noted the limited responsibilities of CHWs as the main reason for not consulting them (Staples 2001). In Brazil, CHWs are focused on trust-building and promoting the value of referring patients to basic health units (BHUs) to receive PHC. However, when referring to BHUs, patients face several problems, such as inconsistent information about programs and a shortage of human resources. Staples (2001) noted that providing an official licence may create a gap between health staff and communities, whereas unofficial training may result in being ignored by the health system (Gilson *et al.* 1989). As mentioned by Salehi Zalani *et al.* (2016), the primary reason for declined willingness to receive services from health posts is insufficient information of Behvarz workers compared with local community members. During more than 40 years of implementation of this plan, this challenge has been considered from two aspects. On the one hand, the educational level of Behvarzs recruited has changed from elementary school, to third middle school, and now to diploma and an associate degree. In contrast, it is possible to continue studying until the associate degree in the field of health care (Gilson *et al.* 1989).

This Brazilian study indicated that providing an official licence causes increased trust in CHWs, rather than negatively affecting the relationship between them and the local communities. It also causess a balance between various aspects (coordination, comprehensiveness, etc.) of PHC. Gilson *et al.* (1989) noted that health staff with low clinical knowledge would lose their credibility; however, increased clinical skills are associated with a lower inclination towards using preventive services. Improving the community's awareness regarding CHWs' roles, while increasing their technical knowledge, would translate into enhanced acceptability of CHWs by local communities (Jafari *et al.* 2020). Therefore, more investigations are needed to extend our knowledge regarding the balance between CHWs' training and maintaining their communication with local communities (Abbaszadeh *et al.* 2013).

The participants noted insufficient time to enter data into the Integrated Public Health System, known as SIB in Persian, leading to incomplete data registration and declining quality of services. Jafari *et al.* (2020) also noted problems related to administrative tasks and human resources (Saprii *et al.* 2015). The current study showed the inadequacy of available equipment, not to mention their low quality. In a study in India, Saprii *et al.* (2015) reported similar results (Eijkenaar *et al.* 2013).

Inappropriateness between daily living costs and the amount of payment to Behvarz workers is another major challenge noted by participants. The CHW's level of compensation varies from one country to another. In some countries in the region (e.g. Egypt, the Islamic Republic of Iran, Jordan, and Pakistan), the Ministry of Health determines basic salaries. Meanwhile, in other countries, such as Afghanistan, there is use of a combined payment method, with a component for recognition by the local community and/or providing special services (Sauerborn *et al.* 1989). Hence, it seems that pay-for-performance (p4p) is the preferred method to compensate CHWs, because some studies show that p4p will lead to an increase in service quality (Ozano *et al.* 2018).

In a qualitative study on the experiences of Behvarzs regarding the provision of healthcare services in health houses, Keshvari *et al.* (2016) mentioned low compensation, tensioned workplace, high workload, unreasonable expectations, and burnout as the main challenges (Moser and Korstjens 2018), which is similar to the findings of the present study. Although this study provided an in-depth understanding of the experiences of Behvarzs, investigating expert opinions would extend our knowledge regarding PHC challenges.

Other significant identified challenges were dissatisfaction with continuous education programs and accepting Behvarz students from fields other than natural science (e.g. Persian literature).

The study by Shafee Koranjik (2020) also considered one of the main challenges: recruiting students from different acceptable fields. In this study, it is noted that most of the men who have obtained diplomas in experimental, mathematical and humanitarian fields try to continue their education; however, considering that there is no possibility of being recruited in their career field by continuing their education, those who are more talented are deprived of suitable jobs. It seems that such issues are the main reasons for the declined inclination to receive PHC services and not to respond to the health needs of patients (Sauerborn *et al.* 1989).

Furthermore, participants also mentioned the lack of appropriate planning, covering more than one health house by one Behvarz, providing expert services by Behvarz workers, and high workload as PHC challenges. Therefore, identifying the latest health needs of communities and then training Behvarz students accordingly seems necessary.

There is no doubt that Behvarz workers should be trained in the services that they are expected to provide.

Similar studies are performed in other countries to investigate CHW challenges. For example, in a study in Cambodia, Ozano *et al.* (2018) noted that CHWs are faced with challenges regarding systemic, personal, and social interactions, which lead to declined performance. These challenges include poor leadership and support by local government; irregular training, which is mainly focused on vertical health programs; inadequate resources; lack of professional identity; and challenges to change the behaviour of community members. In addition, CHW programs are fragmented and depend on foreign aid (Ozano *et al.* 2018). Based on the history and structure of the Iranian health system, foreign aid does not play a significant role in policymaking.

During the implementation of the primary healthcare program, policies such as upgrading educational qualifications for admission to work as a Behvarz, localising up to a 30-km radius, and increasing the scope of Behvarz duties, especially after the implementation of the health reform plan in Iran's health system, had an important impact on Behvarzs. However, identified challenges in this area demonstrated various other challenges that Behvarzs are faced with, including in the fields of services, equipment, managerial issues, training, and equity, which negatively affected their performance in meeting the health needs of their communities. Behvarzs not only play a major role in the health system, but also contribute to filling the gap between communities and high-level institutions, leading to more homogeneity in policies. Therefore, strategies are needed to emphasise the Behvarz role, with a special focus on engaging local communities. The identified challenges can provide valuable information for health policymakers, and can also be administered by other CHW-like programs worldwide, translating into better effects for patients.

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