



Reducing Maternal Mortality: A Qualitative Study of Health Worker's Expectation in Urban Area, Indonesia

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Abstract

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BACKGROUND: Maternal mortality is a sentinel event used globally to monitor maternal health and the overall quality of reproductive health care. Globally, maternal mortality is mostly due to direct causes; apparently, it is not limited by the setting or geographic region. However, Indonesia has failed to achieve the Millennium Development Goals target for maternal mortality.

AIM: This study aims to explore health workers' and stakeholders' expectations in maternal health services to reduce maternal mortality in urban areas.

METHODS: It is qualitative research through naturalistic, conducted in one of the regencies in Indonesia, the urban area with the highest maternal mortality rate (MMR) in one province by 2019. Data were obtained in the form of information from focus group discussions (FGDs). FGDs were carried out with stakeholders at the health service level (n = 3), first-level health facilities or public health centres (n = 3), and advanced health facilities or hospitals (n = 7). Data analysis in this study employed software (NVivo Release 1.0) to utilize transcripts in coding and categorizing.

RESULTS: The expectations that emerged from health workers' perspectives in the field were an integrated system of collaboration between health facilities, affordability of hospital with comprehensive emergency obstetric care in action for maternal-neonatal referral urgency, and the skilled health workers as a golden opportunity.

CONCLUSION: Health workers' expectations can improve the quality of maternal health services in urban areas, thereby reducing the MMR with a system of collaboration between health facilities, the affordability of maternal-neonatal emergency referral facilities, and the availability of obstetricians who standby.

Introduction

Maternal mortality is a sentinel event used globally to monitor maternal health, the overall quality of reproductive health care, and the progress countries have made toward international development goals. Globally, the maternal mortality ratio (MMR) dropped from 385 maternal deaths/100,000 live births in 1990 to 216 maternal deaths/100,000 live births in 2015, a 44% reduction [1]. A Sustainable Development Goal for 2030 is to reduce the global MMR into 70/100,000 births, and no country exceeds two times of that ratio (140/100,000) [2].

Globally, it was found a few things that cause maternal mortality. According to data from 2003 to 2009, 73% of deaths were caused by direct causes, and 27.5% of deaths due to indirect causes. Some causes of death were bleeding (27.1%), hypertension (14%), sepsis (10.7%), abortion (7.9%), and embolism

(9.6%) [3]. Specifically, Indonesia is a developing country that needs attention to maternal mortality [2]. Moreover, postpartum hemorrhage is the leading direct cause of maternal mortality worldwide; apparently, it is not limited by the setting or geographic region among high-income countries so that diagnosed and treated before delivery and inter-hospital transfers of women should be improved [4].

Particularly, the official MMR in Bantul District, was high, 108,36 deaths/100,000 live births in 2018. The MMR in Bantul District was higher than in neighboring district in one Province, Java Island [5]. Bantul is an urban area (76% urban) with a population of almost 1 million and an area of 506.9 km². The number of maternal health facilities in Bantul is quite complete, with 14 hospitals, 16 Public Health Centres (PHC) and several private clinics. However, the health facility as a Comprehensive Emergency Obstetric Care (CEmOC) referral hospital was only 1 (the United Nations Children's Fund standard are two CEmOC hospitals for 1 million people) [5], [6].

Efforts to accelerate the reduction of MMR can be made by ensuring that every mother can access quality maternal health services, including health services for pregnant women and delivery assistance by health professionals in health care facilities. Studies that discuss the expectations of pregnant women, families, and health workers about maternal health services have been carried out, especially in rural areas. However, studies have not been conducted in urban areas, where urban areas also contributed to maternal mortality. The majority of maternal deaths in urban areas were due to direct causes, such as postpartum fever, bleeding, or toxemia. Besides, the high maternal deaths in urban areas were because of the contribution of indirect causes that were not reported by doctors. Health services in urban areas had an impact on expectations that maternal mortality was low, and improving maternal health [7] because health facilities in the city were available with complete care. Besides, pregnant women could easily access maternity information and kits, owned a readiness for labor, and had readiness for complications [8]. In contrast to Kodan *et al.*, the high number of maternal deaths in urban areas (city hospitals) was influenced by substandard care factors, late diagnosis, incorrect treatment, and inadequate monitoring [9]. The community cannot rely on health facilities in urban areas to guarantee their health, even though the available facilities are complete. It is because human resources are less professional in providing services.

This study aims to explore health workers' and stakeholders' expectations in maternal health services to reduce maternal mortality in urban areas.

Methods

Design

This research is qualitative research through naturalistic inquiry, an unobtrusive strategy by listening, considering what participants achieved and produced, understanding the meaning of stories, their interactions, and achievements, and reporting back. Besides, naturalistic methods can produce important and useful insights for others [10], whose findings are not predetermined [11]. It aimed to gather information from stakeholders regarding the high MMR in the Special Region of Yogyakarta, especially Bantul district, through Focus Group Discussions (FGDs).

Based on the principle, qualitative research is inductive in which researchers collect data to develop concepts. This study's data were obtained from interviews or FGDs in the form of transcripts, observations, and collection of relevant documents, which were examined and shaped in a larger theme so that the researchers could produce reliable findings [11].

Setting

This research was carried out in the Bantul Regency, one of the districts in the Special Region of Yogyakarta. Bantul Regency is an urban area (76%) with a population density of 939,718 people and an area of 506.9 km². Besides, the public facilities are available, such as schools, markets, health centres, hospitals, lodging, or hotels, and most people use the telephone and electricity. The first-level health facilities in Bantul district amounted to 16 PHC with 8 BEmOC standards, including Imogiri 1 PHC, Srandakan PHC, Piyungan PHC, and others. Meanwhile, the advanced health facilities were 14 hospitals with 1 CEmOC standard hospital, such as PKU Muhammadiyah Bantul Hospital, UII Hospital, Panembahan Senopati Hospital (CEmOC Hospital), and others. However, the first highest maternal mortality in the Special Region of Yogyakarta was Bantul district, with 108.38/100,000 live births in 2019, out of 15,508 pregnant women, and located in the Southern Special Region of Yogyakarta.

Study participants

FGDs were conducted with stakeholders at the health service level (n = 3), first-level health facilities or PHC (n = 3), and advanced health facilities or hospital (n = 7). Participants were taken by purposive sampling based on inclusion criteria, including stakeholders at the health office level, family health coordinators, and health facilities at the health center or hospital level, midwife coordinators, PHC doctors, obstetricians, and nurse coordinators. Participants in the FGD were only those who were willing and agreed to participate in this study.

Data collection

Data collection was carried out from FGD activities one time. FGDs are carried out by inviting stakeholders to participate in FGD activities. Participants who attended the FGD were immediately willing and agreed to take part in this activity. The researcher conducted the FGD in a quiet and comfortable meeting room that lasted 60 min using the national language (Indonesian). Besides, the FGD was facilitated by the moderator to lead and direct the discussion with the assistance of observers and minutes. All FGD activities were recorded on video. At the beginning of the FGD, the research team and participants introduced themselves by name, place of residence, and profession. The moderator then asked participants to approve the video recording, ensured the confidentiality of information from them, and offered to anyone who did not want to participate, to withdraw. The moderator used the discussion guide with a predetermined set of open questions to facilitate the flow of discussion and investigated it if necessary. One of the probing questions posed by the moderator is: "Is

there perhaps something that needs to be fixed or a solution to the situation of wrong decision making, late referral, monitor problems that cause maternal death in the golden period?" The researchers discussed and revised these questions until everyone agreed. Focus group guide questions were informed to get responses from stakeholders.

Data analysis

Data analysis in this study's naturalistic approach was the analysis of inductive content [12] by recording and tracking new knowledge. The analysis procedure was carried out by paying attention to flexibility, recording, accuracy in transcripts, and the use of direct quotations that further strengthened credibility in the interpretation of naturalistic data [13], which was translated into English by linguists so that the meaning of sentences in quotations did not differ in meaning. Data analysis in this study employed software (NVivo Release 1.0) [14] to utilize transcripts in coding and categorizing. This analytical approach was a flexible method to allow comparisons in transcribed text and involved categorization of concepts that often appeared into themes. The coding was done by identifying the concepts that were explained in the transcription related to the research questions and incorporated them into the theme. The coding was conducted in an iterative process and involved capturing and coding concepts from the transcript. After concluding the coding process, the codes were then categorized into themes. The themes that emerged were reviewed and compared. The selective process produced an analysis of agreed-level themes and represented correlations (Table 1) and answered research questions.

Rigor of study

Accuracy of research on naturalistic approaches was determined based on evaluation criteria, including credibility, transferability, confirmability, and dependability [15]. The researchers strengthened credibility through accuracy in transcribing recorded results and used direct quotations from participant statements to reinforce results [13], [16]. Besides, this study was approved by the ethics research commission of Universitas Aisyiyah Yogyakarta before data collection, and FGD participants signed an agreement to participate and were willing to be videotaped. Participants were drawn from various health facilities according to inclusion criteria. The results of the FGD were transcribed verbatim in accordance with the video footage, which was then imported into the software (NVivo Release 1.0) for coding and theme determination. All data went through the process of inductive thematic analysis [17]. Transferability was enhanced by recruiting FGD participants from first-level health facilities, advanced health facilities, and health

Table 1: Summary of Theme analysis

Themes	Items	Sample quotes
1. The Integrated System of Collaboration Between Hospitals and Public Health Centres in Monitoring Pregnant Women	<ul style="list-style-type: none"> • Integrated ANC • Networking • Feedback 	'PHC has an obligation to give feedback when the hospital cares for high-risk infants from high-risk pregnant women, or buffs high-risk.' (The PHC doctor)
2. Affordability of Hospital with Comprehensive Emergency Obstetric Care (CEmOC) in Action for Maternal Neonatal Referral Urgency	<ul style="list-style-type: none"> • Knowledge of pregnant women about CEmOC Hospital • Referral process • CEmOC Hospital Work Area 	'... time for obstetric cases is very valuable. hospital with CEmOC located in the middle of the Regency. However, the reach of hospitals in one district is broad. . Furthermore, the conditions of patients who need time, delay time, then emergency action will not be achieved.' (The CEmOC Hospital Midwife)
3. Skilled Health Workers and Golden Time Opportunities for health workers	<ul style="list-style-type: none"> • Shifting the role of obstetricians – midwives • obstetricians are not standby • Decision-making 	'...We realise that our specialist human resources are limited. Thus, maybe, this one will have something later. if there are no specialists, there will be midwives, so one who helps or provides the first treatment is a midwife...' (The Family Health Coordinator (Kesga) Department of Health)

CEmOC: Comprehensive emergency obstetric care, PHC: Public health centres

services and varied in size. Dependability was part of the most crucial aspect in this research, relating to friendly communication used during the FGD, giving participants the opportunity to express their opinions regarding the causes of high maternal mortality, and discussing it until reaching an agreement with the participants. Besides, during FGD activities, a detailed recording was conducted using video, and a detailed recording was made. The confirmation was done by the researcher based on the interpretation of the data and the results of the researchers' understanding and insight. To ensure consistency, one research member conducted all FGD activities and encoded the data, which were then confirmed by other research members to ensure the accuracy of the data by checking the code. The research team discussed the findings of the theme and ensured that the final interpretation was credible.

Table 2: Demographic characteristic of the participants

Demographic Stakeholder	N(%)
Sex	
Female	8(61.5)
Male	5(38.5)
Educational stage	
Obstetricians	3(23.1)
PHC Doctor	1(7.7)
Midwife	8(61.5)
Nurse	1(7.7)
Origin of Institution	
Department of health	3(23)
First Level Health Facility (PHC)	3(23)
Advanced Health Facilities (Hospital)	7(53.8)

PHC: Public health centres

Ethical consideration

This study is part of a more extensive research program conducted in Muhammadiyah Maternal and Child Centre with local government. Ethical approval was obtained from The Health Research Ethics Committee of Universitas Aisyiyah Yogyakarta (No.1483/KEP-UNISA/III/2020). Verbal consent was obtained from the

participants who were assured that their names would not appear in any report. Participation was entirely voluntary. As an incentive, participants received a snack and a small transport refund at the end of the discussion.

Results

The results of the FGD showed expectations that emerged from the perspectives of health workers. This expectation arose related to the problems faced by health workers in the field, covering three major themes: An integrated system of collaboration between hospitals and health centres in monitoring pregnant women, affordability of Hospital with CEmOC in action for maternal neonatal referral urgency, and skilled health workers and golden time opportunities for health workers.

Most (61.5%) of the respondents are females (Table 2). Findings from these discussion sessions are detailed in the following.

The integrated system of collaboration between hospitals and PHC in monitoring pregnant women

The system between hospitals and PHC is essential in monitoring pregnant women's health in particular. It is an effort to assist in a continuum of care to improve pregnant women's health in the PHC work area. This collaboration system can be done by various methods, both with information technology media (through SMS/WhatsApp and telephone) and notification letters. The PHC doctor said:

"Are several mechanisms, some models send SMS, then I forward it to my friends KIA. There is a model that sends an official letter in an orderly manner. Therefore, PHC can follow-up. There is a phone number directly coordinating" (Participant 1).

In reality, the collaboration system implemented by the hospital to monitor pregnant women did not always get feedback from the local PHC. Private Hospital Midwives said:

If there is a high-risk pregnant woman, we still call the midwife of PHC. I hope the PHC will follow-up or visit the house. Nevertheless, in reality, there are PHC that respond and some do not. For example, all the PHC respond to our report. Maybe, we both have a pregnant mother so that we can suppress the emergency (Participant 2).

PHC doctors said:

"PHC has an obligation to give feedback when hospital care for high-risk infants from high-risk pregnant women, or buffs high risk" (Participant 1).

Collaborative systems to improve the health of pregnant women must be promoted through good communication to achieve the same goals between hospitals and health centres so that pregnant women remain monitored through PHC assistance in their area or community. The PHC doctor said:

If we do not run a network or collaboration, finally there is a term that is a broken thread, in dealing with pregnant women or childbirth. The problem is related to how the service, in my opinion, has not communicated well and networked well (Participant 1).

"Networking or collaboration issues, which in essence, the community needs to be improved" (participant 1).

Affordability of hospital with CEmOC in action for maternal neonatal referral urgency

The hospital for CEmOC is the standard place in the neonatal maternal emergency referral, equipped with facilities and services that are available within 24 h. However, the availability of a limited CEmOC Referral Hospital with specific geographical and broad work areas can cause delays in achieving it. The CEmOC Hospital Midwife said:

Time for obstetric cases is very valuable. Hospital with CEmOC located in the middle of the Regency. However, the reach of hospitals in one district is broad. Moreover, the conditions of patients who need time, delay time, then emergency action will not be achieved (Participant 3).

Pregnant women and families with low knowledge about pregnancy were unable to understand the emergencies of mothers and babies, and limited CEmOC referral health facilities resulted in errors in decision making to access CEmOC standard health facilities. The Family Health Coordinator (Kesga) Department of Health (midwife) said:

"We cannot deny that there are still people who access directly to hospitals that are not CEmOC" (Participant 4).

PHC doctors said:

"Pregnant mothers were referred to hospitals. Because they were too long in line, then accessing private services" (Participant 1).

Pregnant women with obstetric emergencies require immediate action with comprehensive neonatal maternal facilities. However, in reality, the referral process, which is not easy, could reduce the golden times in taking action to achieve opportunities for maternal health. Private Hospital Midwives said:

"We refer to it often. I interfere with policymakers to disburse doctor's referrals. Because looking for references is very difficult" (Participant 5).

"Sometimes, waiting 10 min, waiting for the phone "Oh full." For example, until Wates, until Klaten, calling for a referral is difficult" (Participant 6).

Skilled health workers and golden time opportunities for health workers

Skilled health workers, namely obstetricians, become the main focus in providing neonatal maternal emergency management. However, the limited number of obstetricians in referral hospitals has led to a shift in roles that have been replaced by less-skilled workers in neonatal maternal emergencies. The Family Health Coordinator (Kesga) Department of Health (midwife) said:

"We realize that our specialist human resources are limited. Thus, maybe, this one will have something later. If there are no specialists, there will be midwives. Therefore, one who helps or provides the first treatment is a midwife" (Participant 7).

Obstetricians who did not standby made midwives performed the initial treatment, although collaboration was done through telephone. It required a considerable amount of time to take immediate action. The Family Health Coordinator (Kesga) Department of Health (midwife) said:

"There are midwives. Thus, they are the ones who help or provide the first treatment, even though the midwife will always consult or call" (Participant 7).

Emergency obstetric patients referred to the hospital require immediate action and cannot buy time to wait for the obstetrician. The CEmOC Hospital Midwife said:

"The conditions of patients need immediate action, but it will not be achieved by delaying the time. Because ob-gyn is not standby" (Participant 3).

It could worsen the patient's condition when the obstetrician did not standby, and it was difficult to coordinate if there were obstetric emergency patients. Private Hospital Midwives said:

"If there is an emergency, use quotation mark so that is when the obstetrician is in the hospital. Still, if not, obstetricians are difficult to contact to take action" (Participant 5).

Besides, non-CEmOC hospitals that received referrals but human resources and facilities that were not standby 24 h contributed to delays in providing emergency management. Private Hospital Midwives said:

"Private hospital type D with operating room facilities, not 24 h. The surgery team must also be gathered if there is an operation. Obstetricians available one doctor and even that standby still seem awkward" (Participant 5).

Obstetricians did not stand by at the hospital, making it unable to conduct a comprehensive

examination, so it could not be denied that the wrong decision making in action was possible for pregnant women. The obstetrician of the Private Hospital said:

"53% of patients experience inappropriate clinical decision making; that is, quite high. This person needs to be evaluated, and there is 47% late execution, this is also the person" (Participant 6) (Figure 1).

Discussion

The first findings of the research are the system of collaboration between health facilities to monitor pregnant women do not go well because the communication and relationship between health officials so that the goal not reached and the dissolution of collaboration "threads" of monitoring maternal health. Klode *et al.* explained that the failure of professional collaboration was due to a lack of understanding and interpretation that was contrary to the role in collaboration so that the relationship between professionals was not well established [18]. The most common issue for professional is a lack of effective communication and teamwork [19]. In addition, Behruzi *et al.* stated that collaboration in maternal care there are obstacles at the level of interaction such as lack of communication, at the organizational level due to the lack of interest in midwives and different philosophies in practice, and lack of professional resources [20].

Professionals who know their roles and have good relationships with other professionals include communication, trusting relationships, respect, and positive feedback in maternity care to be important points in collaboration between sectors [20], [21]. WHO explains that success in sustainable care, especially for pregnant women at risk, requires the effective, efficient, and proactive collaboration of all professionals involved in maternity care [22], [23], [24]. Collaboration between professionals ensures continuity of care [25], [26], [27] and helps monitor and improves health services [28]. This is because of the interdependent collaborative process of professionals and has the same goal of integrating services, resulting in better health care [25], [29]. Collaboration between professionals

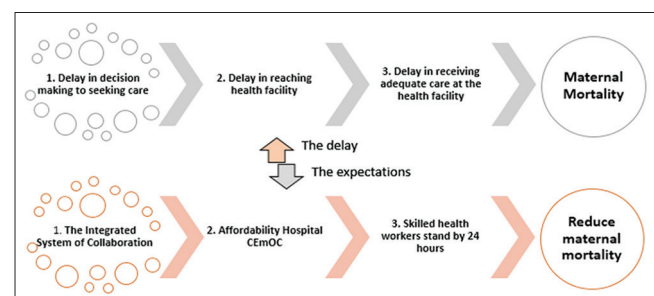


Figure 1: Model of expectations to prevent delays in reducing maternal mortality

is the fulcrum in providing sustainable care to escort pregnant women at risk to produce the final output, namely maternal and infant health, by minimizing morbidity and mortality.

The second finding states that CEmOC referral hospitals' availability is minimal and is located in the city center with a non-flexible referral system so that most pregnant women access non-CEmOC health facilities. UNICEF explained the need for vigilance that not all pregnant women have access to quality and safe health services [6]. Kongnyuy *et al.* stated that the CEmOC standard referral hospital located in urban areas is a different obstacle for pregnant women in rural areas in terms of geography [30]. Health facilities that far away make it difficult for pregnant women to access standardized health care even in emergencies [31], [32], thus potentially increasing morbidity and mortality for pregnant women related to access to delivery locations [33], [34]. Another barrier to reaching CEmOC standardized referral hospitals is the referral system. Chaturvedi *et al.* in their research stated that the use of a referral system does not guarantee access to appropriate health care [35]. This is because the referral procedures are inflexible and delays in recognizing the condition of the patient, resulting in a late referral, referral zigzagging, and multiple referrals, which increases the delay patients to get immediate action [36], [37] and contribute to poor outcomes, including maternal mortality and infants [35], [38].

The global standard for providing CEmOC standardized referral hospitals is 1:500,000 population [6], to reduce mortality and morbidity. Jahn and Debrouwere explained that accessibility is an essential factor in the use of health care, especially the CEmOC referral hospital, by adding care facilities adjusted to the population's number and distribution [39]. Maternal morbidity and mortality can be prevented by providing a CEmOC standardized hospital easily accessible to the community [40], [41] with complete facilities including cesarean section, blood transfusion services, and care for sick newborns and others [42]. The results showed that pregnant women at risk who had faster access to CEmOC health facilities had a lower MMR and improved maternal health [43], [44]. This was due to immediate action by skilled health personnel with complete facilities CEmOC standardized hospitals.

Another fact is that effective referral services for obstetric complications are at the core of improving pregnant women's health by meeting the needs of CEmOC care for pregnant women at risk [45]. Other studies describe efforts to improve maternal health by improving effective and robust referral systems [40] through communication systems, adequate transportation [31], [46], [47], rationalizing referrals according to operational referral guidelines (referral forms), and feedback reports [39]. Besides, the development of an electronic referral system can shorten and accelerate the communication process

between health facilities to maintain continuity of care [48]. CEmOC standardized referral hospital and an effective referral system into one integral part to optimize care quality for pregnant women at risk.

The latest finding in this study is that midwives replace the main role of skilled health workers (obstetricians) in referral hospitals. Midwives are the obstetrician's right hand to carry out initial treatment for maternal referrals according to instructions because obstetricians do not stand by 24 h at the referral hospital, while pregnant women who get referrals need urgent action to prevent delays inadequate service. Nadkarni *et al.* explained that in their research, doctors did not stay by every shift, increasing the number of maternal mortality by tenfold [49]. This is consistent with Ghana's research because the delay in intervention by obstetricians to pregnant women at referral hospitals is one of the main factors in maternal mortality [50], [51]. Health facilities do not function properly due to the unavailability of obstetricians, as skilled health workers [46], [52]. In addition, Elmusharaf *et al.* stated that it is better not to have health facilities available than for pregnant women to access non-functioning facilities and incompetent health workers because these two things contribute to an increased risk of maternal death [36]. Other studies have also stated that human resources in the health sector significantly contribute to maternal, neonatal, and infant mortality [53].

The fact is that if the referral hospital equipped with adequate and skilled human resources, especially obstetricians in carrying out case management, adherence to protocols or standard operating procedures, and supporting equipment and infrastructure can reduce maternal mortality dramatically [50]. Sharan *et al.* mentioned that in CEmOC and non-CEmOC referral hospitals in Eritrea, most obstetricians take the optimal day and night shifts to provide direct referral care to pregnant women to minimize morbidity and mortality [54]. Other studies describe secondary facilities as referral places that must have complete staff in pregnant women at risk, resulting in overall maternal health [49]. The importance of a 24-h stand-by obstetrician in referral services at the hospital to provide care and direct case management for pregnant women at risk is proven to provide adequate care, resulting in maternal and infant health outcomes.

The findings of this research show that improving maternal health and reducing morbidity and mortality can be achieved through a collaborative network of health workers between hospitals and health centers, affordable referral hospitals, and the availability of skilled health workers for the golden opportunity period. This study has several limitations, including data collection by FGD, which was only done once, and participants in this FGD were stakeholders and health workers. Thus, the researchers have not explored phenomena that occurred in the community, especially pregnant women who received care in CEmOC health

facilities or non-CEmOC health facilities to obtain in line understanding of phenomena to achieve the same expectations, namely reducing neonatal maternal mortality. However, despite these limitations, attention needs to be paid to the fact that this research meeting is specifically at policymakers' level to improve the health of pregnant women and reduce morbidity and/or mortality in the community.

Conclusion

A pregnant woman is entitled to get health with a little pain during her life cycle by meeting the needs of quality health facilities and care. Our findings indicate that the expectations of health workers can improve the quality of health services in urban areas with a delay prevention model, thereby reducing maternal mortality. The stakeholders and health workers' expectations are essential as a lesson learned in reducing maternal mortality because they fully understand the shortcomings and needs required in the field in providing good quality services.

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