



# BMJ Open Healthcare providers' perception of the referral system in maternal care facilities in Aceh, Indonesia: a cross-sectional study

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## ABSTRACT

**Objectives** Our study investigates the barriers perceived by staff in the referral systems in maternal healthcare facilities across Aceh province in Indonesia.

**Design** With a cross-sectional approach, two sets of surveys were administered during September to October 2016 in 32 sampling units of our study. We also collected referral data in the form of the frequency of ingoing and outgoing referral cases per facility.

**Setting** In three districts, Aceh Besar, Banda Aceh and Bireuen, a total of 32 facilities including hospitals, community health centres, and private midwife clinics that met the criteria of providing at least basic emergency obstetric and neonatal care (BEonC) were covered.

**Participants** Across the 32 healthcare centres, 149 members of staff (mainly midwives) agreed to participate in our surveys.

**Primary and secondary outcome measures** The first survey consisted of 65 items focusing on organisational measures as well as case numbers for example, patient counts, mortality rate and complications. The second survey with 68 items asked healthcare providers about a range of factors including attitudes towards the referral process in their facility and potential barriers to a well-functioning system in their district.

**Results** Overall, mothers'/families' consent as well as the complex administration process were found to be the main barriers (36% and 12%, respectively). Healthcare providers noted that information about other facilities has the biggest room for improvement (37%) rather than transport, timely referral of mothers and babies, or the availability of referral facilities.

**Conclusions** The largest barrier perceived by healthcare providers in our study was noted to be family consent and administrative burden. Moreover, lack of information about the referral system itself and other facilities seemed to be affecting healthcare providers and mothers/families alike and improvements perhaps through a shared information system is needed.

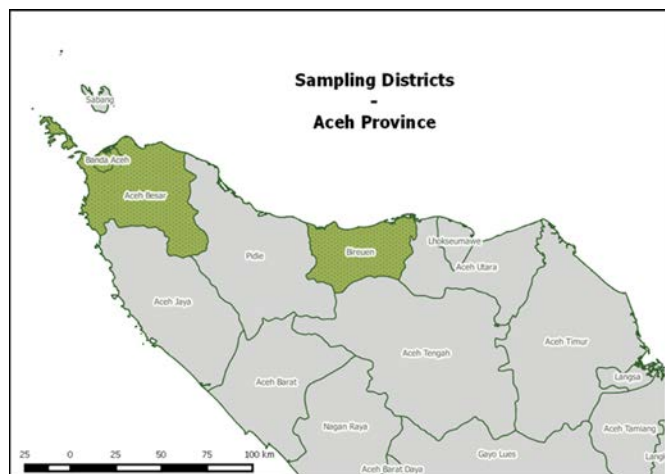
## BACKGROUND

Although across low-income and middle-income countries (LMICs), there have been

## Strengths and limitations of this study

- By using an open-ended question (qualitative), we aim to identify key barriers in the referral system perceived by care providers that allowed capturing their feedback without asking leading questions or being bound by a limited preset number of response options.
- It covers various types of maternal care facilities including public and private facilities in urban and rural areas.
- This is a cross-sectional study and thus, presents the conditions as they were at the time when the study fieldwork was carried out.
- Our study might have limited external validity depending on regional culture and needs.
- This research only looks at the provider's perception of the referral system and further studies incorporating mothers'/families' feedback are needed.

improvements in the provision of maternal healthcare, maternal mortality ratio (MMR) has remained high and far from the ambitions of Sustainable Development Goal 3 (SDG 3), that is to reduce the global MMR to 70 per 100 000 by 2030.<sup>1</sup> This trend varies noticeably between regions and in Asia for example, India was more successful in pursuing this goal with an annual reduction of 4.0% of MMR compared with only 0.6% in Indonesia<sup>2</sup> during the same period. A review across 171 countries indicates that areas where intervention strategies were tailored and prioritised according to the regional needs were more successful in reducing MMR.<sup>3</sup> Aiming to improve the provision of maternity care particularly in LMICs, practical guidance such as the WHO's Safe Childbirth Checklist (SCC)<sup>4</sup> was introduced to ensure that even in settings where resources



**Figure 1** Sampling districts.

are scarce minimum requirements for a safe delivery can be provided. Early identification of the need for a referral either for mother or for baby is noted to be essential on this 29-item checklist, which has also been recommended to be adapted to the local context.<sup>5</sup> In the case of birth complications, a timely and efficient referral system can prevent unnecessary loss of life.<sup>6–8</sup> A successful referral system, however, depends on a number of factors such as time efficiency, effectiveness of communication between various healthcare providers, and in particular, provision of intelligible and adequate information to mothers and their families.<sup>9</sup> In countries similar to Indonesia, where the healthcare system is less centralised, cultural context, particularly in rural areas, plays a key role and can potentially pose as a barrier in this route.<sup>10</sup> Although there are reports of successful interventions in some regions,<sup>11</sup> such programme might fail to achieve their goals without appropriate cultural consideration.<sup>12 13</sup>

Our study aims to depict the state of the referral system and the barriers it is facing perceived by healthcare providers in Aceh, Indonesia, across different types of facilities that could be used as a basis for developing intervention programme to improve the referral system. This process, however, as illustrated by a study in rural areas of West-Java is rather complicated and it cannot be achieved by merely providing additional referral training to Traditional Birth Attendants (TBAs).<sup>14 15</sup> Moreover, although improvements across all health facilities are needed, increasing human resources without a systematic network of information might result in uneven distribution<sup>16</sup> affecting efficiency as well as the quality of care.

## METHODS

### Setting

In Indonesia, although in recent years the overall conditions of maternal and neonatal healthcare have improved, this success was not evenly distributed across various regions. Aceh province, the area of our study, has made tangible improvements during recent years, however, its MMR remains close to the Indonesian average and is

characterised by issues in delivery care that may be representative for other Indonesian provinces. According to the regional statistics, there were 167 maternal deaths per 100 000 live births in 2016,<sup>17</sup> which surpasses the target of SDG 3: ‘Ensure healthy lives and promote well-being for all at all ages’ by more than a factor of 2.

This province was among the first to target its whole population with health insurance when the government introduced the Acehnese health insurance *Jaminan Kesehatan Aceh* (JKA) in 2010. This was followed by the introduction of the general Indonesian health insurance *Jaminan Kesehatan Nasional* (JKN), which united all previous insurance schemes and extended it for those who were previously not eligible under the coordination of *Badan Penyelenggara Jaminan Sosial* (BPJS) in 2014.<sup>18</sup> In 2018, 16% of deliveries in Aceh province still took place at home while in total 93.1% of deliveries were assisted by healthcare professionals of which the majority were midwives (assisting 62.7% of total deliveries)<sup>19</sup> who are the main focus of this study.

Based on the referral guidelines introduced in 2011 and reinforced through JKN, patients are obliged to first visit primary healthcare facilities, which would refer patients only after diagnosis to the district hospital, from where finally referrals to a higher-level hospital would be ordered if necessary. This way, primary healthcare facilities would have a gatekeeping role and reduce the burden of crowding in hospitals. However, anecdotal evidence indicates that patients living close to hospitals would disproportionately often skip the primary level and go directly to the district or provincial hospitals.

Our sample contains private and public health facilities across three districts in Aceh, namely Aceh Besar, Banda Aceh and Bireuen (figure 1). The three districts were chosen based on need (mortality rates) and practicability (proximity to the research institute at Banda Aceh). They represent the Acehnese diversity in terms of urban (Banda Aceh) as well as rural and remote (Aceh Besar and Bireuen) contexts. Due to practicability concerns, we did not cover very remote areas, which arguably face even more severe referral barriers. Among these districts, we considered all hospitals, community health centres (*puskesmas*) as well as private midwife clinics with the inclusion criteria of providing at least basic emergency obstetric and neonatal care (BEmONC). The inclusion of both private and public as well as primary and secondary facilities allows for a comprehensive overview of the local maternal and neonatal care services. Based on data from the provincial and district health offices, 40 facilities were identified and invited for two information meetings, which took place in September 2016. Participation was voluntary and 32 facilities decided to participate. These facilities comprise 17 *puskesmas*, 8 private and 4 public hospitals as well as 3 private midwife clinics.

### Data collection

Prior to the data collection, the study gained ethics approval from the ethics committee of the Syiah Kuala

University and also from the ethics committee of the University of Göttingen. The data were collected during September and October 2016 in 32 sampling units of our study. Data collection was divided into two distinct surveys. First, a general questionnaire (65 items) was conducted focusing on organisational measures as well as on case numbers like patients, mortality and complications as well as the frequency of ingoing and outgoing referral cases. For this purpose, enumerators interviewed the facility's administration or head of midwives. Second, through an individual questionnaire (68 items) enumerators asked healthcare providers about their characteristics, workplace satisfaction, teamwork and motivation, attitudes towards the referral process in their facility, and an open question regarding the barriers to a well-functioning system in their district (please find a copy of the survey questions for which the results are presented in this article provided in the online supplementary appendix A). We also collected referral data in the form of the frequency of ingoing and outgoing referral cases per facility.

These data were collected anonymously by trained enumerators. Prior to each interview, enumerators gave an introduction to the volunteered participants including a description of the study, benefits, risks and contact details of the researchers in case they have questions later or would like to withdraw their consent and then each respondent read and signed a consent form. Enumerators collected data via mobile devices using Question Pro software and then the research team processed the information via Stata V.15.0. We analysed responses to an open-ended question that asked the staff about their perception of referral barriers and classified them under 12 categories. The classification was reviewed and double-checked by a second author.

### Patient and public involvement

Patient and public were not co-producers in this study.

## RESULTS

There were 25 632 total deliveries in the sampled districts in 2015. Together the 32 facilities participating in our study made up for some 11 000 deliveries per year. These were administered by 601 healthcare staff members, working usually in three shifts. Of these, we were able to conduct interviews with 149 midwives via individual surveys, equaling a sample of approximately 25% of the total target population. We ensured the representativeness by surveying facilities during different shifts (including night shifts) and reduced non-response bias by returning to those facilities where at the first attempt of collecting surveys very few midwives were present.

The level of care among 32 facilities including hospitals, *puskesmas* and private midwife clinics varied but they all met the criteria of providing at least Ante Natal Care (ANC), BEmONC, delivery and Post Natal Care (PNC). In comparison with *puskesmas* and private clinics, public

and private hospitals had a higher level of maternal care, both in terms of human resources and the practices offered (signified by the rate of caesarean sections). This diversity, however, only translated into negligible differences concerning the availability of medical supplies and equipment, which was generally on a considerably high level. The only reported supply constraints were the lack of functioning mucus extractors in eight cases and additionally one facility indicated to lack soap and clean water access.

Table 1 provides an overview of the most relevant indicators of the surveyed health facilities stratified by healthcare provider type. These figures show that in comparison with outward referral, inward referrals were more prevalent across all the facilities who participated in our study. This could be attributed to the sample composition, which included a large fraction of the region's hospitals, which are the main recipients of referrals, whereas many of the sending primary level health facilities or individual midwives were not part of the study.

All private and public hospitals provided full coverage of Comprehensive Emergency Obstetric and New-born Care (CEmONC) but only 33% of the private midwife clinics and none of the *puskesmas* provided this service. Figures presented in the online supplementary table B.1 appendix B reveal that the main complications in our sample were obstructed or prolonged labour (4.8% weighted mean of total deliveries), antepartum haemorrhage (3.7%), pre-eclampsia (1.9%) as well postpartum haemorrhage (1.8%). Among infants, the following complications ranked highest: asphyxia (7.4%), low birth weight (6.5%), birth trauma (5.4%), prematurity (2.7%) and respiratory distress syndrome (2.6%) (this includes a yearly approximation of complications for two facilities, which could only provide records for a 4- and 6 months' timeframe). The online supplementary table B.2 appendix B presents these figures stratified by type of service providers. Here for example, the annual rate for pre-eclampsia at *puskesmas* was 3 cases per 100 deliveries at the facility.

Ninety-one per cent of our respondents indicated that the introduction of national health insurance has lowered the financial barriers for patients to search care in a timelier manner. Our data indicate that the referral rule is applied in practice, where *puskesmas* first refer to a district hospital, which refers consecutively to the provincial hospital (we asked respondents to indicate their main outward and inward referral facilities, which provides a self-reported indication of the facility level in the referral system). Eighty-two per cent of our study population indicates that the referral of patients to the right facilities according to their conditions has improved since the introduction of JKN.

In response to an open-ended question on barriers for referrals (*What do you think are the main barriers of the referral system in your district?*), a number of themes emerged. Commonly noted barriers were families' and mothers' consent (36%), administrative/form filling complexities

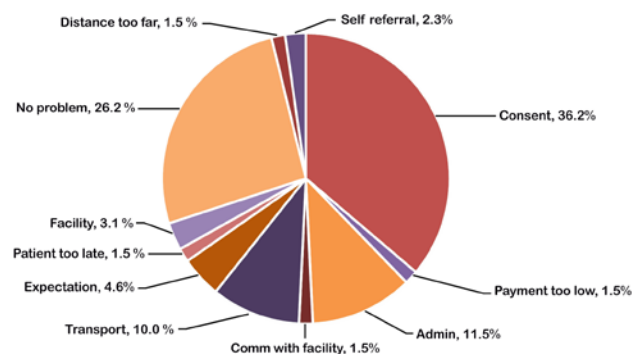
**Table 1** Descriptive statistics (mean) of key indicators for participating health facilities stratified by service provider type.

	Puskesmas	Public hospital	Private hospital	Private midwife clinic
<b>I. Facility size</b>				
Staff per delivery unit	21.31	22	14.25	8
Staff per delivery shift	2.81	3	3.5	2.67
Bedsides for mothers*	3.81	12.5	26.63	7.33
Labour rooms	1	1.5	1	1
Labour tables	1.63	5.5	3.5	1.67
<b>II. Yearly case numbers and rates†</b>				
Deliveries total	51.38	688.5	908.88	96.67
Deliveries Caesarean section	2.19	182.5	574.63	15
Rate of caesarean sections	1.43	24.80	58.69	13.51
Maternal deaths	0.06	3.5	1	0
Maternal mortality rate	0.12	0.53	0.10	0
Infant deaths	0.13	2	6.63	0
Infant mortality rate	0.26	0.29	0.43	0
Maternal complications	9.13	164.25	131.5	7
Maternal complication rate	37.8	23.03	26.20	3.67
Infant complications	7.25	240.75	328.25	4.02
Infant complication rate	36.43	29.53	27.13	2.29
No. of inward referrals (infant+mothers)	107.8	50.3	73.6	33.9
No. of outward referrals (infant+mothers)	261.0	1.0	3.4	10.4
N	17	4	8	3

\*This number excludes one facility due to inconsistencies in the data collection process.

†Annual rates (Aug. 2015 - July 2016) of cases in 100 deliveries at the facility level, where more than one complication may occur per delivery.

(12%), inadequate transport (10%), family/mothers expectations (5%), facility capacity and sufficiency of equipment (3%), and self-referral (2%) (figure 2). Using the open-ended question format allowed us to capture perceptions without hinting for a pre-set list of possible responses.



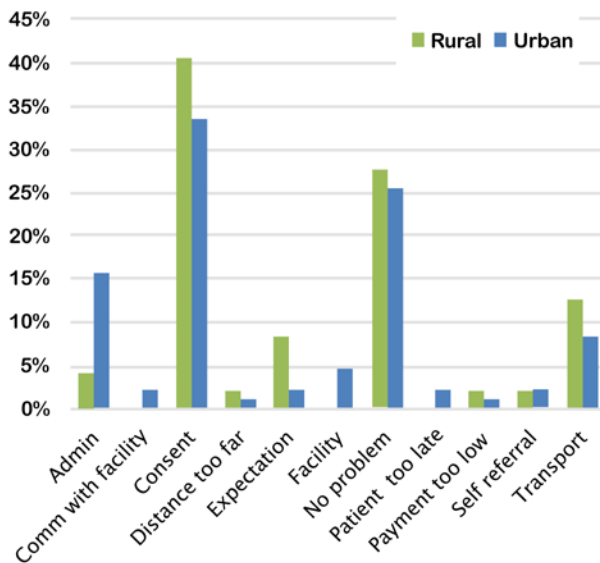
**Figure 2** Main barriers in referral system perceived by healthcare staff.

Although family consent was reported to be the largest barrier, it was a multifacade factor; complexity in filling the required form, slow decision making and costs associated with moving to the distant facility were some of the subcategories that were noted.

Self-referral seemed to be a small proportion of the problems and it had a similar divide between urban and rural facilities indicating that from the staff's view, urban facilities did not necessarily receive a higher number of self-referrals. Similarly, mothers' and their families' expectations only accounted for 5% of the total perceived barriers. In this regard, staff followed to say 'usually the patients have too much requests to the health facilities, sometimes they don't want to be referred to the other health facilities. The patients also usually need to have a compromise with the other family member, especially to the elderly' and 'the patient does not know the administration requirements files'.

Although 10% of respondents indicated that transportation still poses a barrier, health facilities seemed to be generally equipped to provide access to the referral system as all of our 32 responding facilities indicated that they have a functioning ambulance. However, the constraint was noted to be rather related to the

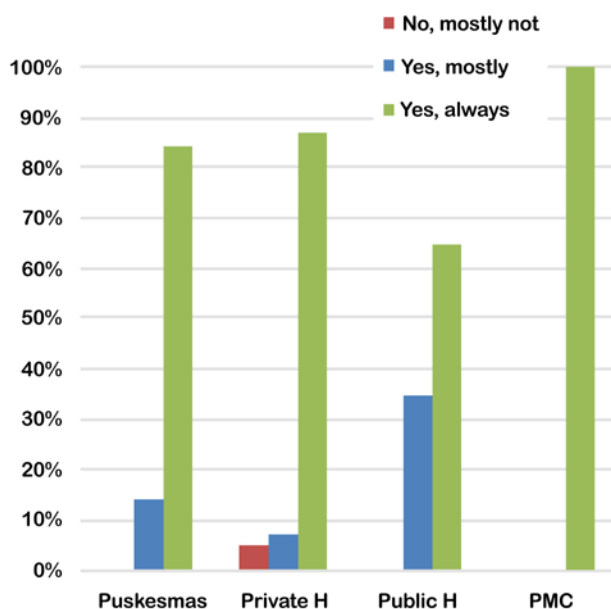




**Figure 3** Main barriers in the referral system perceived by healthcare staff in rural versus urban areas.

availability of ambulance drivers in terms of number and standby duty. Administrative burden was also found to be a barrier that puts further hurdles to timely referrals in terms of ‘unclear referral regulations’, ‘difficult referral forms’ or ‘the lack of important documents that need to be provided by the patient’.

Insufficient space and limited facilities accounted for a small proportion of barriers (3%) and this was only across



**Figure 4** Perception of health facility referring newborns at the right time by facility type, *puskesmas*, private hospital (private H), public hospital (public H) and private midwife clinic (PMC).

hospitals (more in private, 8%, than in public, 4%) and only in urban areas.

A noticeable ratio of respondents (26%) said there were no problems with the referral system and there were no noticeable differences between responses from urban versus rural areas or across different facility types. Although in some of the cases this could reflect the true perceived conditions, it should also be noted that this high ratio could be due to social desirability bias and our study is limited to distinguish between the two.

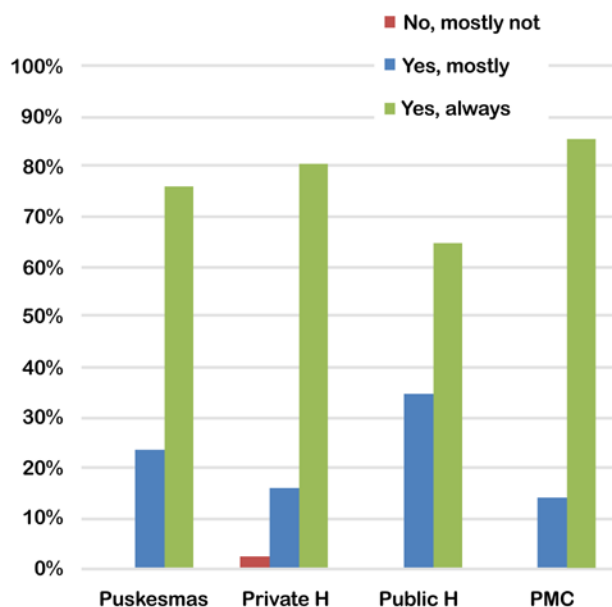
Across different facility types, private midwife clinics noted transport, communication with other facilities and self-referral to be the only barriers they face and, for example, consent was not reported to be a barrier there. As indicated in the online supplementary table B.2 appendix B, their rate of external referral was quite low and overall, these facilities account for a smaller proportion of our sample (5% of respondents) in comparison with hospitals and *puskesmas*. Consent and particularly family consent on the other hand was a common barrier in *puskesmas* (40%), public hospitals (35%) and private hospitals (36%). Across both hospital types, administrative complexities including complicated referral forms and patients bringing incomplete forms were said to be an issue.

Figure 3 shows barriers breakdown by rural/urban areas. Here, consent seemed to be more of a problem in rural (40%) than urban areas (34%). Transport is also a larger barrier in rural areas (13% vs 8% in urban areas). This perhaps contributes to families’ and mothers’ concerns (complexity and potential associated costs) that contribute to their unwillingness to give consent. The largest gap was related to administration complexities and facilities in urban areas found the required paperwork more complicated and difficult to manage than those in rural areas (16% vs 4%).

In terms of perceiving the timing of referral for mothers and newborns to be appropriate, there were some differences across facility types and only staff at the private hospitals said that mothers and newborns were not referred on time in case of complications (2% and 5%, respectively, in figures 4 and 5). This was also reflected in the relatively high rate of stillbirths per year reported by the private hospitals accounting for 56.7% of the total reported stillbirths across all the facilities in this study.

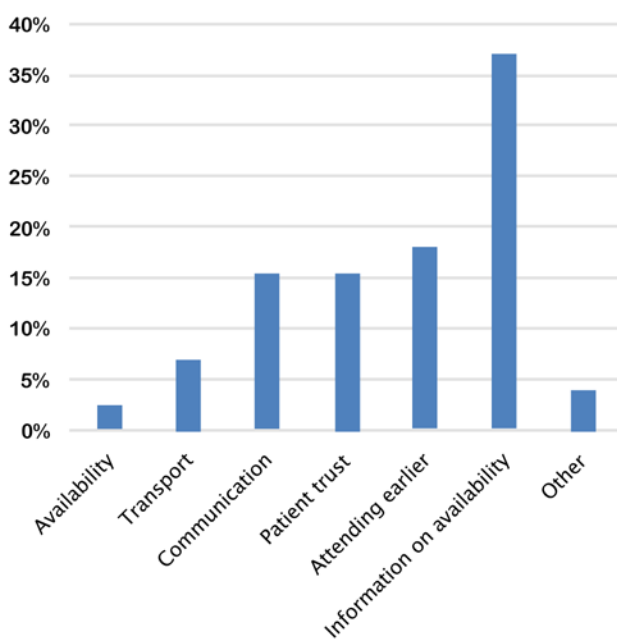
Overall, midwives across all the facilities noted the information on the referral system to be the key element that is needed for making improvements (figure 6).

The current payment system could also pose a barrier itself. One respondent stated for example that since ‘the payment for referral is not enough, so we persuade the patient to not be referred immediately’ but try to treat them in their own facility in order to receive larger compensation by BPJS. As this problem was highlighted by health personnel from public and private facilities, it seems to occur in both systems. Primary facilities such as *puskesmas* get fixed capitation fees by BPJS according to the number of persons they serve in their area. This can



**Figure 5** Perception of health facility referring mothers at the right time by facility type, *puskesmas*, private hospital (private H), public hospital (public H), and private midwife clinic.

be increased by non-capitation fees such as costs for transportation or inpatient care, which become particularly relevant in the case of referral. In hospitals, no matter which accreditation class, payment is diagnosis based and furthermore depends in case of private hospitals on whether it participates in BPJS services. Only the treatment in the own facility can be accounted for and therefore poses an incentive to treat the patient in the own facility for as long as possible. This incentive might even



**Figure 6** Needed for improving facilities' referral process.

be stronger in private facilities as they are largely excluded from receiving referrals. In this vein, when asked about potential improvements in their facility, 15.4% of our interviewed healthcare staff indicated for their respective facilities that they would desire higher levels of mothers' trust in the (lower) referral tiers. This could also explain that a further 18.1% of health practitioners would like to see the mothers arriving earlier at the facilities.

Additionally, most health practitioners in our sample would wish for better information for mothers on the available referral options. As referral guidelines in Aceh province are based on facilities and their rating/accreditation, information about services and corresponding specialists are limited. This means that healthcare staff refer to a facility with a rating, which corresponds to the patient conditions. In this vein, 54.3% of health practitioners said that they had only limited or no information on services provided and specialist availability at the referral facilities.

Moreover, according to the criteria of BPJS staff earn a higher honorarium for treating at their own facility. However, when healthcare staff were asked about this, the majority (59.5%) said the honorarium is the same and not dependent on referral or treatment at their own facility. This could probably be due to most of the sample consisting of midwives while the final referral decision is made by doctors.

## DISCUSSION

This study aims to highlight barriers in the referral system as perceived by maternal healthcare providers in Aceh province. In response to an open-ended question more than one third of the respondents indicated that mothers and, especially, members of their family would often object to the referral to more distant facilities. To some extent, this might be a reflection of the cultural barrier at the demand side that is similarly reported in other low-income and middle-income countries where social hierarchy adds to the complexity of the settings.<sup>20</sup>

Indirect costs (eg, food or family accommodation) and poor communication with mothers and their families in terms of benefits from attending a better-equipped facility in the case of complications could also be contributing factors in reluctance for giving consent.<sup>21</sup> In Aceh, family members often accompany mothers during birth. Those indirect costs which are not covered by JKN could constitute a further economic barrier that reduces families' consent to referrals. The limited information might be also related to patient overload and hence could add further constraints on the healthcare system.

Although in our study, referral at the right time was not found to be a major issue, perhaps this was incorporated into the response to mother/family consent being a barrier as the two are interlinked. A study of MMR in Aceh in 2016 identified three types of delays that increased the risk factors of MMR in this region. Besides delays due to distance factor and poor means of transportation as well

as delays in receiving adequate health service and skills of health providers dealing with complications, delay in decision making due to stigma, family hierarchy and cultural beliefs was noted as one of the problems that contributed to the high MMR in this region.<sup>22</sup>

Our study supports findings that the introduction of national health insurance has lowered the financial barrier for patients to attend official healthcare centres, however, similarly cultural barriers were reported to be a remaining factor.<sup>23</sup> Having adequate and improved information on the availability of the referral system (about transport, midwives, access and care) was also noted by healthcare providers to be one of the important factors that could help with improving the referral system in their facility. This is potentially a reflection of the absence of central health (and referral) system management.<sup>24</sup> The lack of clarity and absence of information might also inevitably cause confusion and misperception among mothers and their families and contribute to their sense of reluctance to give consent when information in general is inadequate. In this vein, we need to note that our study is limited and further research that would incorporate mothers' and their families' attitude, perception, and experience of the referral system using mixed methods (qualitative and quantitative) are needed.

## CONCLUSIONS

Maternal care providers interviewed in our study indicated that family consent and the burdensome administration process were greater problems in the referral system than other obstacles such as transport and late admissions. Information availability to care providers, mothers and their families alike were key factors that could improve the referral system. These findings could inform the development of intervention programme that are tailored to local needs. Such programme would be able to both increase the entity and quality of the maternal services and improve the efficiency and effectiveness of the referral system.

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**Contributors** SV, KR, LK and SS: conceptualised the study. FD, MA, II, MM, MM, SD, KR, LK and LR: contributed to the data collection. KR and LK: analysed the data and wrote the first draft of the manuscript. HS: contributed to the statistical analysis. IM: contributed to the conceptual writing and analysis of the study. All authors revised the manuscript for important intellectual content and approved the final version.

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**Patient consent for publication** Not required.

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**Data availability statement** Data are available upon reasonable request and when the dissemination of the project full results is completed.

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