Our son is 'our asset, future, and bank': exploring gender-related factors influencing adherence to advice and treatment-seeking guidance following hospital discharge among infants and young children in Bangladesh

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Abstract

Background

Post-hospital discharge mortality risk is high among vulnerable subgroups of children in many low and middle-income countries (LMICs). The available literature suggests that gender plays an important role in post-discharge adherence to medical advice, treatment-seeking and recovery for ill children in LMICs, including those with undernutrition. We are not aware of any studies that have specifically explored gender-related factors influencing adherence to advice and treatment-seeking guidance following hospital discharge in young children in LMICs.

Methods

A qualitative study was embedded within a larger multi-country multi-disciplinary observational cohort study known as the Childhood Acute Illness & Nutrition (CHAIN) Network. Primary data through formal interviews were collected from household members of 22 purposively selected cohort children, who were visited repeatedly in their homes over 6 months following hospital discharge (total n = 78 visits to homes). Household interviews were complemented by individual interviews with 6 community representatives, 11 community health workers and 12 facility-based health workers, as well as group interviews with 24 community representatives. Data were analysed using NVivo11 software, using both narrative and thematic approaches.

Results

We identified a range of health service/system level gender-related factors that impacted families' post-hospital discharge adherence to medical advice, treatment-seeking and recovery. These included: fewer female medical practitioners being available in healthcare facilities, which influenced mothers' interest and ability to consult them promptly for their child's illnesses; gender-related challenges for female (and male) community health workers in supporting mothers with counselling and advice; and male caregivers' being largely absent from the paediatric wards where information sessions to support post-discharge care are offered. Gendered influences at household/community level post-discharge, which interplayed with those at health service/system level, included: women's role as primary caretakers for children and available levels of support; male family members having a dominant role in decision-making related to food and treatment-seeking behaviour; and greater reluctance among parents to invest money and time in the treatment of daughters over sons.

Conclusions

A complex web of gender related factors operate at both the health systems/services level and at the household/community level, with potentially important implications for post-hospital discharge adherence to advice and treatment-seeking for young children. Immediate interventions that may help support positive change include introducing training and support processes that build awareness among all stakeholders – including male family members - of how gender impacts on child health and recovery, and about how adverse consequences of gender-based discrimination can be alleviated. Specific initiatives include those focused on communication in facilities and homes, and changes in routine practices such as who is present in facility interactions. To maximise and sustain the impact of any such immediate actions and interventions, the structural determinants of women's position in society and drivers of gender inequity must also be tackled. This requires interventions to ensure equal equitable opportunities for men and women in all aspects of life, including access to education and income generation activities. Given patriarchal norms locally and globally, men will likely need special targeting and support in achieving this.

Background

Post-hospital discharge mortality risk is high among vulnerable subgroups of children in many low and middle-income countries (LMICs) [1–4], sometimes exceeding in-hospital mortality rates [5, 6]. Undernourished infants and young children with acute illness have a particularly high risk of death during hospital admission and after discharge [7]. There is a clear need for a better understanding of mechanisms underlying severe illness and mortality in young children, including the clinical, nutritional, health system, environmental, socio-cultural and economic dimensions [8].

The available literature suggests that gender plays an important role in post-discharge adherence to medical advice, treatment-seeking and in the recovery for undernourished children in LMICs [6, 9]. Gender refers to the roles, behaviours, activities, attributes and opportunities that any society considers appropriate for girls and boys, women and men, and people of other genders [10]. Gender is known to affect how men, women and people of other genders live, work and relate to one another in all walks of life, including in relation to healthcare and the health system [11]. In healthcare and health systems, gendered power relations can influence employment patterns, impacting on the gender balance across different types of healthcare providers [12]. Gender norms and the sex of the provider can in turn influence interpersonal dynamics between parents and providers, which shapes parents' treatment-related decision-making and actions. In homes and communities, gender can influence vulnerability to ill-health, household decision-making for illness, health-seeking behaviour, and utilization of health services [11]. Gendered power relations can therefore affect when a child is admitted to hospital, who brings the child to hospital and stays with him/her during hospitalisation, and adherence to advice post-discharge [13, 14].

In order to improve post-discharge outcomes for vulnerable children, it is essential to design health interventions that are targeted towards children at risk, simultaneously effective and equitable, and which are informed by contextually relevant gender analyses [15]. Previous studies conducted in South Asia suggest that an important influence at the health system level is the gender composition of health workers. Specifically, that there are more male than female medical practitioners in some South Asian countries, particularly in rural facilities [16, 17]. This has been shown to contribute to women's (and their husband's) discomfort in seeking care for their children at those facilities due to social norms [18]. However, there are more female than male community health workers

(CHWs) in many of these settings. CHWs have been shown to play an important role in supporting households – especially women - with identifying and responding to child illnesses, and negotiating with others in the household for advisory and financial support [19–21].

At household and community levels important gender influences include the role of women as the main carers of children, and – especially for young mothers - having limited access to household resources and low decision-making power [22, 23]. Furthermore, there are differences in access to funds and decision-making processes between rural and urban areas. Although dynamics are also now changing as a result of more women earning their own income, particularly in urban areas, this broad pattern remains true in many LMICs [15, 23–26]. Another important influence at household and community levels in South Asian contexts is preference for male children, which in turn results to preferential medical treatment of boys over girls [27–29]. Specifically, parents are more willing to 'go the extra mile' for boy children compared to girls, including seeking care from more distant or expensive facilities [30–32]. In these settings, higher mortality rates among girls than boys – where observed - have been attributed to longer treatment delays for girls, lower rates of hospitalization, fewer vaccinations and less nutritious diets[27–30].

In this paper, we explore gender related factors that influence the post-discharge experience for acutely ill young children admitted to two hospitals of International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) in Bangladesh. We draw on interviews with family members of purposively selected children, and on interviews with health providers and CHWs living in the catchment areas for these hospitals, and consider the implications for policy and practice.

Study Sites And Methods

The Childhood Acute Illness and Nutrition (CHAIN) Network

This study was conducted as part of a large multi-country observational prospective cohort study undertaken by the CHAIN Network (www.chainnetwork.org). CHAIN is a multi-disciplinary research network aimed at understanding the mechanisms contributing to high child mortality in hospital and after discharge in LMICs, in order to identify children at risk and interventions to improve their survival [8]. CHAIN is leading a cohort study at nine hospital sites in Africa and South Asia, recruiting more than 3,000 acutely-ill children at admission to hospital and following them up post-discharge. Scheduled follow up visits are conducted at days 45, 90 and 180 after hospital discharge. Children are enrolled in three strata based on anthropometric status since this is a strong marker of survival risk that encompasses both biological and social risks: severely wasted or kwashiorkor (SWK), moderately wasted (MW) and not wasted (NW). As part of the broader goal of the CHAIN Network, a qualitative social science sub-study was undertaken in four of the nine sites (two sites in both Kenya and Bangladesh). This paper focuses on the qualitative data from the Bangladesh sites; one rural and one urban.

The Bangladesh CHAIN sites

The two CHAIN study hospitals in Bangladesh were Dhaka (urban) and Matlab (rural) hospitals of icddr,b [8]. The Dhaka hospital is located in the capital city and the Matlab hospital about 55 km southeast of Dhaka, in a rural sub-district of Chandpur District. As described elsewhere, these hospitals provide a full range of free treatment and services for patients admitted with diarrheal disease with or without complications or associated problems or with isolated respiratory illnesses [33,34].

Most patients admitted to these hospitals were from low socio-economic backgrounds. In Dhaka city, many of the hospital users live in one of the city's informal settlements (sometimes referred to as 'slums'), where 37.4% of Dhaka city dwellers live and where environments are very crowded, with poor sanitation and hygiene practices [35]. When compared to non-slum urban areas, slum-dwelling children have been reported to be more undernourished have lower immunisation rates, and have higher rates of measles, diarrheal illness and severe dehydration [36]. Their mothers are more likely to work outside of the home earning an income [36]. The majority of the admitted children in Matlab hospital of icddr,b were from the Matlab sub-district, a rural location with no major towns or cities (except for the Matlab bazaar, with a population of approximately 56000 people as of 2020), and has limited inter-village trade and commerce. The predominant occupations of its population are subsistence farming and fishing [37].

The qualitative sub-study in CHAIN

Data collection

This qualitative study involved family members of admitted children, community representatives and diverse health workers. We interviewed family members of 22 children purposively selected from the Bangladesh CHAIN cohort. Children and their respective families were selected to maximise diversity of experience based on: nutritional status (10 SWK, 7 MW and 5 NW); household socio-economic status; geographical location (10 living in Dhaka slums and 12 living in rural villages); and any recent exposure to any major socially disruptive event such as death of a caregiver. We visited each household 2-4 times post-hospital discharge (within the 1st week, day 45, day 90 & day 180) conducting a total of 78 household interviews. Three children died and another three migrated during the follow up period, and we were therefore not able to undertake the full range of interviews with these families. In-depth interviews during the home visits covered a broad range of topics including: child health and nutrition; the child's illness trajectory and related treatment-seeking and decision-making; experiences with the admitting hospital and the health system more broadly; as well as challenges faced during the child's illness episode and coping strategies. Non-participant observations were also conducted at the re-admitting hospital and at the household level to give a sense of living conditions and family dynamics, community relations, as well as experiences and interactions at the hospital. Household interview data were supplemented by interviews with community representatives (n=6), community health workers (n=11) and facility health workers (n=12); purposively selected from the respective villages of the selected children. All interviews were audio-recorded. Interviews were carried out at a convenient time for the respondents.

Data analysis

Recorded interviews were transcribed verbatim, and interview and observation notes written up immediately following fieldwork into detailed household stories for each child. Transcriptions in Bengali were entered into NVivo11, and household stories typed up and translated into English using Microsoft Word. We combined a narrative approach and a thematic coding approach in the analysis of household data. We used household stories to examine families' overall pathways through care, and to look for patterns of similarity and difference across households, facilitated by the construction of charts (see Zakayo et al for a more detailed explanation) [38]. For the thematic analysis, we developed a coding framework based on our initial study objectives and preliminary emerging themes of interest, and developed charts condensing coded outputs to support identification of patterns by sex of children, household structure and headship, and rural and urban context. A similar thematic analysis approach was used for the community representatives and health provider data. Additionally, we carefully examined the household stories and charts to explore any gendered power relations at household/community and health services/facilities/system levels. To support our analysis, we drew on Morgan et. al.'s gender framework to consider what we were learning at both levels in terms of who has what (access to resources), who does what (the division of labour and everyday practices), how values are defined (social norms, ideologies, beliefs and perceptions) and who decides (rules and decision-making, both formal and informal) [11].

Ethical approval

CHAIN protocols were approved for science and ethics in all participating countries. In Bangladesh, the study was approved by the Research Review Committee and the Ethical Review Committee of icddr,b. Written informed consent was sought from participants for all in-depth interviews, observations and recordings, and – continuing consent for households – was checked in each subsequent household visit.

Results

Following an overview of participant and household characteristics, and overall influences on post-discharge treatment-seeking and recovery, we bring together our findings on gender-related influences at health-system/service and household/community level in turn. As we will show, these genders related factors are inter-related and had important impacts on post-discharge adherence to advice and treatment-seeking behaviour.

Interviewee characteristics and overall treatment-seeking patterns

The main characteristics of the 22 families involved in this study are summarized in Table 1. Of the 10 urban children, 5 were SWK, 3 were MW, and 2 were NWAcross both sites, children were admitted into hospital and enrolled into the CHAIN cohort aged 3 to 17 months, with all reported by parents as having been sick on and off since birth. Eight of the 10 children had experienced a disruption in the family within the last two months from the time of enrolment in this study including recent migration, separation or income earning loss among parents, maternal illness or a change of caregiver. Of the 12 rural children involved, 5 were SWK, 4 were MW, and 3 NW, with 8 having experienced a family disruption. Nineteen of the twenty-two children were reported by family members to have fully recovered by the time we completed our interviews and three children had died.

[Table 1 to be placed here]

In an earlier publication, we explored influences on treatment-seeking and recovery for the undernourished children in the CHAIN cohort [39]. Across what were often lengthy treatment-seeking pathways, we showed that key factors influencing treatment seeking and recovery were hospital advice and media campaigns on hygiene practices, positive social and financial support from family members, other relatives and neighbours, and free treatment from icddr,b hospitals. Key challenges to treatment-seeking and recovery of children included mothers having to juggle multiple responsibilities in addition to caring for the sick child, lack of support - and in some cases violence - from the child's father, and family members' preference for relatively accessible drug shops, physicians or healers over (re)admission to icddr,b hospitals.

In this paper we present in detail the gender related factors at facility/health system and household/community level that interplay to shape when a child is admitted, who brings the child to hospital and stays with him/her during hospitalisation, and adherence to advice post-discharge.

<u>Gender related factors at the facility/health system level</u>

Fewer female medical practitioners being available in healthcare facilities, particularly in rural areas

There was widespread recognition across participants (household members, community representatives and health care providers) that there are fewer female than male medical practitioners available in healthcare facilities, particularly in rural areas; a sex difference documented in national databases [16]. Interviewees gave a range of reasons for this pattern, including that few female practitioners are willing to be posted to remote or rural health care facilities and that family members are more hesitant to allow female practitioners compared to male practitioners to live remotely.

After discharge from the hospital, many interviewees were concerned that provider gender had an important influence on mothers' willingness and ability to seek prompt care and advice for themselves, with indirect implications for child related health and treatment-seeking. Reasons given for mother's hesitation in seeking prompt advice and care from male providers were cultural and religious norms about men and women interacting. More rarely, concerns about sexual harassment of women by male health workers were raised. Recognising such concerns, two male practitioners reported developing strategies to encourage women to visit them, including making special efforts to build rapport with women and seeking assistance from female colleagues. Although they felt these strategies were successful, it was notable from other interviews that mothers' reluctance to seek care from male practitioners also came from, or was reinforced by, other members of their household or community. For conservative Muslim families in particular, a woman talking with a male physician about her own or her child's illness was reported to be a sin.

The concerns of mothers and family members about a male medical practitioner also impacted on their treatment-seeking for children, including in delaying access to formal healthcare, and influencing their adherence to recommended care and treatment post-discharge. In two of the households we followed up for example, mothers who had sought treatment for their child from a male practitioner were later forced by family members to discontinue the treatment and advised instead to seek treatment from a female healer. As one of these mothers recounted:

"I received treatment for my child's diarrhoea from a male physician against the decision of my mother-in-law. For this reason, my mother-in-law had stopped talking with me. So, I had to discontinue the treatment to make my mother-in-law happy and went instead to a female healer as she suggested. [Going there] did not help the child recover." Mother, Rural,HH01

In turn, many men were also not comfortable taking their children to male physicians (instead of their wives) because they felt they did not have sufficient in-depth knowledge of the illness history that physicians would want to hear, and it was reported that physicians expect to get this detailed information from women since they are the ones who primarily care for the child.

Nonetheless, the sex of the provider was not felt to be important for everybody in relation to children's health and associated treatment-seeking. Some interviewees mentioned that relatively educated, wealthy and employed women, and women who already have significant interactions with men beyond their family, were not as likely as others to be as concerned. As one mother explained:

"I am used to talking with men in my workplace (garment factory) where both men and women work together. My husband does not mind this as he also works in the same working environment. So I never hesitate to talk with a male health worker about the illness of my child, or even about my own health problems." Mother, Urban, HH55

It is also noteworthy that the sex of the medical practitioner appeared to be less of a concern for large urban hospitals where children were re-admitted, compared to the smaller local health facilities in rural areas. The reason for this was unclear. We however think that this could be pegged to the severity of the child's illness by the time they are being re-admitted into these larger hospitals; as well as patients and parents being less isolated in these facilities compared to when in smaller, especially rural, facilities.

Male caregivers preferring not to stay in the paediatric ward with (re)-admitted children

We observed, as expected, during initial admission and re-admissions that children in the paediatric wards were generally cared for by female relatives of various ages, with men visiting their admitted children occasionally to bring money, supplies and to catch up on their children's progress. One of the main reasons for this pattern is that childcare is primarily the female domain, and income earning the male domain (described further below). Given the financial constraints and needs that so many families with ill children were facing, many interviewees talked about children's fathers needing to be out earning an income to support their family members. Also, many children were still breast feeding and therefore needed their mothers there wherever possible.

Where women were employed or had particularly high work burdens in their homes, they reported that they could not ask their husbands to take over from them in the wards because reportedly (by health workers) nurses and physicians did not want fathers there, and fathers also felt uncomfortable about it as they did not want to be the 'only men' there. Part of this discomfort for the health staff and parents was that there is little privacy in the wards, and it is difficult for other women to breastfeed their children if there are men in the wards; linked to general cultural and religious norms in this context around what is appropriate 'mixing of sexes'.

The above challenges contributed to some employed mothers, and some mothers with many other responsibilities in their homes, to discharge their children against medical advice, failing to follow post-discharge advice and resisting re-admission to hospital. As one urban mother explained:

"My husband does not feel comfortable in the wards and so prefers not to stay there looking after my child during my working hours. He was available to help at that time due to his unemployment but I had to take care of my child during re-admission [in another hospital] for a few days. This led to me losing wages. Because of the income loss I could not purchase the prescribed medicines. In the end I made the decision to take discharge against medical advice." Mother, Urban, HH55

As women are allowed and able to stay in the hospital, they generally have much more interaction with facility health providers than male relatives or other family members. They therefore receive much more advice than their male counterparts on children's feeding, hygiene and medication practices. Nonetheless, once they are discharged and are back home, it can be difficult for them to implement this knowledge. One reason for this is that these women often have multiple chores to attend to and so may have to hand over some of the child's care to others in the home (without an accompanying handover of the information obtained from the hospital). At the same time, due to household hierarchies and dynamics, their knowledge and views – even if based on information given in hospitals - may not be as highly regarded as that of men and elder women. As an adolescent mother from an extended urban household explained:

"I was trained during admission in the icddr,b hospital on providing medicine, food, and properly breastfeeding my child. After discharge, I had to get back to doing household chores. Other family members - particularly my mother and father-in-law - took care of my child most of the time. So I could not provide food and medicine directly to my child. I suggested that they wash their hands before preparing and providing food and medicine to my child, but they did not listen. Sometimes I was scared to ask them to maintain the proper child care practices. Since I am the youngest and least experienced woman in childcare in the house, they didn't really value my suggestions." Mother, Urban, HH59

Family members' concerns linked to the gender of community health workers

In contrast to the gender distribution of medical practitioners, there are far fewer male compared to female community health workers (CHWs) in Bangladesh. According to national guidance, government and NGO linked CHWs can support with the well-being and treatment of young children through providing advice on where to seek care, and counselling on food and hygiene practices, including post-discharge from hospital. Nonetheless, very few of the household members we talked to reported consulting or getting support from CHWs, despite many being eligible according to national and local guidance.

Three CHWs felt that their gender did not impact on their ability to perform their expected tasks, and in fact assisted them to get easy access to households. However, several others reported that they faced a range of challenges. Firstly, they felt that male family members did not value their advice as much as women did, and so when women were out working and only male household members remained in homes, it was uncomfortable to enter homes with children in need. Young and unmarried female CHWs in particular felt shy about and even feared talking alone with older men in households. Furthermore, male CHWs, although fewer, also faced gendered concerns regarding interacting with women alone, particularly in communities that did not know them well. As one male CHWs explained:

"Previously I faced challenges working with women to ensure child vaccine coverage as I was posted in an unknown community. I had to spend a lot of time talking with male household members to establish good rapport to get easy access to the household and to talk to women about the required health services for their children. Now I am not facing such problems as I transferred to work in my own community where everybody knows me very well since birth. [there are no questions of] Who I am? Whose son?." Community health worker, Rural, CHW03

Secondly, many CHWs are trained to support with women's empowerment and to prevent domestic violence. This reportedly led to some female CHWs being prevented by their own husbands to go and visit homes (where those husbands are not supportive of this training or had security concerns for their wives); as well as to some female CHWs being prevented from visiting households by men, with negative implications for CHW's ability to support children following hospital discharge. As one CHW reported:

"Some mothers discussed with us about the domestic violence by their husband and wanted suggestions from us [about what they could do]. The husbands then found out that their wives had received suggestions from me about how to handle illegal behaviour. Later I was not able to access those households to perform my regular duties [including child monitoring]. I knew about [the law] because I received training about violence against women from BRAC[Bangladesh Rural Advancement Committee-an NGO]." Community health worker, Urban, CHW25

A related concern for female CHWs was that they were sometimes restricted by their own partners in going out of their homes to conduct their CHW roles. As already noted above, this was sometimes related to concerns about their women's empowerment agenda, or more generally to conservative religious views and women interacting with non-family males. Other reasons included female CHWs having a heavy burden of responsibilities in their own homes, and husbands being concerned about their wives having extramarital relationships.

Thirdly, use of mobile phones is important in getting in touch with children's mothers. However mobile phones are sometimes controlled by men in households making it difficult to reach women over the phone to provide advice and support.

Gender related factors at the household/community level

Gendered roles and relations

Most interviewees reported a strong gender difference in household roles, with many suggesting that women overall work longer hours than men. In addition to the care of their children, women are primarily responsible for regular household chores, farming activities and sometimes income earning work outside the home. In contrast, men were generally reported to play the main income-earning role, working 4 to 8 hours in a day outside of the home, and to spend the remaining hours socializing with others, watching television, sleeping and – rarely - assisting their female partner in caring for their children. Given this broad division of roles and responsibilities, it is typically the child's father who is responsible for paying for a child's food and health care, and the child's mother (with the support of other female relatives) is responsible for ensuring that the care and treatment is given.

Interviews with fathers suggested that it is unusual for fathers to care for their children or give treatment directly and that many feel uneasy and inadequately prepared to do so. Furthermore, given societal norms about appropriate gender roles, it might be frowned upon in the local community if a husband is seen to be undertaking these perceived 'feminine' tasks. There was also a suggestion that a father may not have a similar level of love for his child compared to a mother.

Interviewees mentioned that this range of responsibilities for mothers can mean that mothers – while admitted in hospital with their children - are keen to return home as quickly as possible (contributing to early discharge); and that the heavy workload can contribute to some post-discharge advice not being followed. Where mothers have to go out to earn an income, particularly in the urban areas where there are more employment opportunities and higher costs of living such as rent, children's follow up care post-discharge may also be compromised. Two working mothers commented for example that when their children were ill post-discharge, they had to take them to their workplaces because they did not have a suitable caregiver at home. At their workplace - despite wanting to - they were unable to follow hospital instructions, due to work demands.

Several rural interviewees mentioned that women are not allowed to move alone outside of home and so cannot access a health centre to get care for their ill children unless accompanied by a male member of the household. For children who are still breast-feeding and advised by hospital health workers to continue this post-discharge to prevent illness (e.g. diarrhoea) and reduce undernutrition, additional gender-related concerns arise. These include norms around lactating women being asked to serve others in the household before themselves, leading to their going hungry (with negative implications for milk production), and men worrying that if their wives breastfeed their children regularly, their breasts and body shapes will be less attractive (contributing to early cessation of breastfeeding).

Women's access to household resources, and decision-making power

In this study context, traditionally and to date, men and elders have financial control over the household's income and other resources. This applies even to employed women who sometimes cannot access the income that they have earned, as cultural norms dictate that they should give their income to their husbands (see illustrative quote below). Many interviewees mentioned that women's lack of access to household resources can prevent them from being able to follow hospital advice post-discharge, and work against them bringing their ill children to a physician as needed. One mother explained her situation:

"As per instructions from my mother-in-law, I am supposed to give my monthly salary to my husband for household expenditure. I told my husband [once during post-discharge] to take my sick child to a physician, but he did not do anything. Later on, I asked him for money so that I could take the child for treatment, but he still would not give it to me. Instead, he beat me for asking for it! Over time, my child's illness got worse. Fortunately, I was able in the end to borrow some money from my brother and friends and so could bring my son to the hospital where he was admitted because he was so severely ill". Mother, Urban, HH55

Accessing funds from a child's father can be even more challenging where parents are separated or divorced.

Potentially linked to financial control in households, many interviewees described that a child's father and other household elders (e.g. grandparents) make decisions about all family matters including the food, medicine, and treatment-seeking needs of children including in the post-discharge period. Reasons included women being considered outsiders to a home (having only come in from another home after marriage), and as the carriers of children rather than their main creators. Women's agency to make decisions regarding care of their children post-discharge was therefore limited in many households. This was, however, generally reported to increase with age, education, employment and where women were bringing money into the household from their own parents' home. This highlights important intersections of gender with other social categories to increase women's ability to play a role in their children's care and make related decisions.

Beyond generally having low decision-making power, five mothers directly reported that their husbands were unwilling to listen to the advice mothers had received during their child's admission with regards to the types of food the child should be given and where they should go for treatment. They attributed fathers' unwillingness to listen to a deliberate intention among fathers to maintain their leadership status in household. They said they were unable to challenge their husbands' behaviour as perceived disrespect of husbands could result in violence. Four mothers for example reported being obliged to go to healer or drug-seller for their child's treatment against the mothers' wishes. Below is an illustrative quote of one such instance:

"The father of the child brought medicines from the local drug shopkeeper for my child despite having the prescribed medicines by a hospital physician to continue at home after discharge. He has forbidden me from continuing with the hospital medicines because of the child's delayed recovery and instructed me to start the drug seller's medicines instead. I was obliged to do it, otherwise he will beat me." Mother, Urban, HH54

Mothers also reported being hesitant to seek treatment for their children from medical practitioners against their husbands' wishes as they would be blamed for any unintended adverse events (i.e. deterioration of illness condition, treatment failure or death), and risk being beaten or divorce. One mother noted that hospital staff had advised against giving street food to her child to prevent illness (i.e. diarrhoea, fever) or against seeking treatment from healers or untrained medical practitioners. However, family members did not listen to the mother post-discharge, which she felt was unfair, given that she is also blamed when the child gets ill:

"An uncle of the child brought outside food (low quality bakery food) to feed my child. He quarrelled with me when I told him to avoid those food items to prevent the illness of my child, but he still gave the food to the child. But other family members often blame me when the child gets ill which I think is totally unfair." Mother, Urban, HH59

Greater reluctance among parents to invest money and time in the treatment of daughters over sons

There was a widespread perception among our participants (household members, community representatives, and health care providers) that boy children are generally given more food and medicine, and are better breastfed and cared for, than girl children. During the post-hospital discharge period, in a few households where direct choices had to be made, parents selected care for their older boys over younger girls. The main reasons given for these patterns were that boys are expected to go on to provide financial and non-financial support to their parents in later years and maintain the father's lineage, whereas girls are expected to leave the family after marriage and provide service in their marital homes as described above.

We observed in our interviews a general difference in the handling of boys and girls, and of more respectful interactions and better support for mothers from their husbands in relation to boy children. For example, during one of the visits to the household of a male child living in the rural site, the father asked his wife to provide medicines to their son in time given that the son is 'our asset, future, and bank'.

Conversely, there appears to be less support to mothers with girls, with one mother explaining that she had become pregnant too early after the delivery of a girl to fulfil her husband's desire for a baby boy. Another mother reported being depressed because her husband intended to get another wife in the hope of getting a baby boy. Five mothers reported that in their households, fathers would prioritise their elder boys over girls in buying food in times of significant financial hardship.

In terms of meeting post-discharge treatment-costs and completion of treatment courses, several mothers mentioned that there was a preference for boys, or at least special concern for them. As two mothers explain:

"My child [girl] was re-admitted to hospital with diarrhoea, pneumonia, and fever. The condition of her illness did not improve after staying for a week in the hospital. The child's grandmother said, 'the child's condition is so bad she'll not survive, so why you are staying in hospital? Instead you should go back home

to look after your elder male children for their future'." Mother, Rural, HH05

"This is our much waited for boy having already given birth to two girls. Recently, my son was admitted to the hospital twice for his illness. We had to spend a lot of money to cover his treatment. His father sold his agricultural land in our rural home to cover it, and he took an urgent loan from a local NGO. We sacrificed our own foods, sometimes eating less and missing out on other basic needs." Mother, Urban,HH62

A community representative and health worker reported that girls' conditions are sometimes more severe due to delayed treatment-seeking, and that there are higher death rates among girl children during re-admission and post-discharge as a result. Interestingly, this pattern was not seen in the CHAIN quantitative data across all cohort children in the two study sites, but some nevertheless describe it as a reality:

"Female children often die in the hospital due to the delay in treatment-seeking and late re-admission. However, this [the death of a girl child] is not a big matter for parents, but the death of a male child is considered a big loss for them". Community representative, Rural, CR-KII-19

One community health worker mentioned that her counselling strategy worked well to motivate some parents to seek early treatment for their girl children from a medical practitioner. She reported giving real-life examples of successful women (e.g., the female prime minister of the country) whose success can be attributed at least in part to their parents' support.

Discussion

Contextually relevant gender analyses are needed to improve health-related interventions programs and policies that support children's recovery following discharge from hospital, but few studies have specifically explored this. We drew on interviews with family members of children who had been admitted in two icddr,b hospitals in Bangladesh, and on interviews with health providers, community representatives and CHWs living in the catchment areas of these hospitals, to document gender-related influences on post-hospital discharge adherence to advice and treatment-seeking for acutely ill young children. In Table 2 we summarise the findings using the Morgan et.al. gender framework [11], adapted to distinguish gender influences at household/community level and at health service/system levels.

[Table 2 to be placed here]

In terms of health systems/services, two important influences on post-hospital discharge adherence to advice and treatment-seeking for young children were the sex of medical practitioners in facilities and of CHWs. Interviewees reported that concerns about interactions between men and women led to mothers - especially rural mothers and those living in conservative Muslim homes - being uncomfortable in seeking care from male medical practitioners, contributing to delays in seeking care for their children, including post-hospital discharge. A mixed-method study conducted in 12 rural sub-districts of Bangladesh reported that most healthcare providers (60%) managing under-five year old sick children are male [16]. Another survey conducted in four rural sub-districts noted that many women are only allowed to meet an unknown male health provider to seek care for their children in a dire emergency [40]. Together with our study, these findings suggest that it is essential to continue to work towards improving gender parity in who is providing health care for women and children in facilities, particularly in rural facilities, and that in clinical encounters those who wish to see a female practitioner, or have one present, can. Immediate interventions that could support greater equality include interview and selection processes that recognize the need for more female providers, family-friendly work environments to encourage women to apply for advertised positions (for example flexible work schedules, job shares, and creches at work), and more gender-sensitive career progression opportunities (including distance-learning and part time training opportunities) [41]. Such initiatives are likely to be essential in many LMICs, given the evidence that women's increased participation in the workforce can help reduce child mortality [42].

In another Muslim majority country, Pakistan, efforts to introduce more female health workers were undermined by abusive hierarchical management structures, disrespectful interactions – including sexual harassment from male colleagues/supervisors, and inadequate consideration of women's gender-based cultural constraints [17]; challenges that may also be faced in Bangladesh. Any policy changes need to be informed by specifically tailored research into these issues and potential underlying structural drivers of inequality (returned to below). Our findings suggest that interventions should include a strong emphasis on communication training and support for all medical practitioners, to understand how gender affects their interactions with community members, and what might be done to overcome challenges encountered. Several male practitioners in our work suggested, supported by studies elsewhere [43], that strategies such as medical practitioners engaging fathers can be valuable in building relationships and trust. More in-depth gender analyses at health facility level are needed to inform locally appropriate gender awareness programs at hospital and primary health care levels.

Partly as a result of the above findings, the role of CHWs is potentially particularly important in supporting households – and especially women in households - with identifying and responding to child illnesses, and with negotiating with others in the household for advisory and financial support, and against emotional and physical violence. While CHWs being primarily women made them relatively accessible and appreciated by mothers, their advice and support, and sometimes even their visits, were reportedly dismissed by some husbands and fathers. Husbands of CHWs themselves were also sometimes hesitant about their work and concerned that it might lead to their wives' inappropriate interaction with men. Such findings have been documented before in rural Bangladesh [44], and a cohort study among BRAC CHWs reported that reasons for attrition among female CHWs included family disapproval of their activities and their conflict with commitments to their own family [45].

Previous studies have shown that support and encouragement by family members and supervisors is an important motivating factor for CHWs [44], assisting them to gain confidence in interacting with men and in negotiating work-related challenges [46]. These findings suggest a gender sensitization program is required not only for health facilities, but also for households that CHWs visit, and for household members of the CHWs themselves. Such initiatives could help build trust and respect in the work of CHWs, and enhance their motivation and ability to perform their roles. 'Courtyard meetings' are one potential intervention, where parents and elder family members have an opportunity to discuss the role and responsibilities of female (and male) CHWs in relation to

family health. Such initiatives are urgently needed in Bangladesh, given the demonstrated potential for CHWs to reduce child mortality in the country and elsewhere [19-21, 46].

The above discussion shows the interplay between health systems/service and household/community level gender influences on post-hospital discharge adherence to advice and treatment-seeking for young children. At household level, women's gendered roles and responsibilities were exacerbated in the post-discharge period by the need to continue caring for the recovering child, including for example ensuring appropriate and adequate breastfeeding and other feeding, administering medication and following treatment-seeking advice. Many reported an inability to personally oversee all of these tasks, and having to ask for permission for actions requiring funds or visits to providers outside the home. Our findings reflect those of others who have observed that managing nutrition related-childcare practices is particularly difficult for mothers in busy periods such as rice harvesting months [47] and that traditional attitudes of husbands or mothers-in-law can go against mothers' treatment-seeking desires and cause delays [48].

In LMICs, women's lower status is positively associated with child mortality rates, highlighting the need to prioritize women's rights and autonomy [49]. Underlying norms surrounding treatment-seeking and support in child illness, including post-hospital discharge, are gender-based norms of resource distribution and the general valuing of men's and elder's views and opinions over those of women, and especially younger mothers. As has also been noted by others, women's lack of access to household resources (even their own earned money) and their low decision making power undermines their ability to care for and promptly treat their children when they are ill including adhering to post-hospital discharge advice [23]. Women were rarely reported to openly challenge these norms because it would be considered socially and culturally unacceptable and could potentially be met with violence (especially if unintended adverse events occur) or even divorce. Where mothers suffer from physical violence, this can negatively impact on child outcomes. A study from India for example based on nationally representative data reported that infant and child mortality was greater among those whose mothers had experienced violence from their male counterpart [50]. Violence against women is an important and pervasive problem globally with one report indicating that 1 in 5 women and girls between the ages of 15 and 49 had experienced physical or sexual violence by an intimate partner within a 12-month period [51]. This presents a challenge in achieving the UN fifth Sustainable Development Goal (SDG 5) on promoting gender equality and empowering all women and girls. This in turn (as suggested in literature) impacts on child health and wellbeing resulting in a detrimental ripple effect.

These household/community level findings, and their interaction with health system factors, suggest that health related interventions must engage men and promote gender equity. Men must come to be seen – and see themselves – as active agents of change in supporting their female partners (mother of the children) in raising their children, and in following post-discharge medical advice when they are acutely ill [43, 52]. More fundamentally, our findings support others [22, 23] in demonstrating that the patriarchal norms that limit women's access to household resources and participation in making decisions for the health and well being of all acutely ill children, and especially girls, must be challenged. More immediate household and facility level interventions such as courtyard sensitization meetings must also be accompanied by fundamental and structural changes at higher levels nationally and globally. Structural drivers of gender inequity include the socio-economic and political processes that structure hierarchical power relations, stratifying societies based on class, occupational status, level of education, gender, and other social categories. As George et. al. emphasise, when implemented over time, policies that tackle structural determinants, for example regarding access to education and employment, can achieve long term population effects and reach wider coverage than those (only) focused on household, community or facility level action [53]. Action on these structural factors is therefore essential to maximise and sustain the effect of any more immediate interventions.

Conclusion

There are multiple gender-related influences on healthcare practices for undernourished children during hospitalization and post-discharge in Bangladesh. A complex web of gender related factors operate at both health systems/services level and at household/community level, with potentially important implications across the treatment-seeking pathway for sick children and their families, including post-discharge adherence to medical advice, treatment-seeking and recovery. More immediate interventions with potential to support positive change include the introduction of training and support processes in homes, communities and facilities that build awareness of how gender impacts on child health and recovery, and about how adverse consequences of gender-based discrimination can be alleviated. Specific initiatives include those focused on communication and those targeting changes in routine practices in facilities (including increasing the number of female health workers) and in homes. It is essential that men are included in these initiatives and that in designing and implementing these more immediate interventions, structural determinants are also considered.

Ultimately, and in the longer term, action on structural factors are necessary to maximise and sustain the impact of any more immediate actions and interventions. This includes demonstrating and challenging the patriarchal norms that limit girls' access to education, and women's access to employment, resources and their decision-making power at all levels. To achieve SDG-5 – discriminatory laws and social norms need to be transformed, and there must be stronger female representation at all levels of leadership. Unless women's rights and overall status vis-à-vis men is transformed, the positive effects of more immediate interventions to support children's recovery post-discharge will be difficult to scale-up and sustain. More broadly, achieving SDG-5 is essential to achieving healthy lives and promotes well-being for all, and particularly for young children (SDG-3).

Abbreviations

LMICs-Low and Middle-Income Countries

CHAIN – Childhood Acute Illness and Nutrition Network

CHW-Community Health Workers

icddr,b-International Centre for Diarrhoeal Disease Research, Bangladesh

SWK-Severely Wasted or Kwashiorkor

MW- Moderately Wasted (MW)

NW-Not wasted

HH-Household

NGO-Non-Governmental Organizations

KII-Key Informant Interview

UN-United Nation

SDG-Sustainable Development Goal

Declarations

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Authors' contributions

MFU, SM and MJC conceived the paper. MFU prepared the first draft of the manuscript. SM, KM and MJC contributed to the study design and critically reviewed the manuscript. MFU, under the mentorship of SM and MJC was responsible for the overall development of the manuscript. All authors read, critically reviewed and approved the final draft of the manuscript.

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Availability of data and materials

The date sets cannot be shared publicly due to institutional roles and regulations. Data generated during the study will be provided to interested researchers (Recipients) from the corresponding author on reasonable request.

Ethics approval and consent to participate

The study was approved by the Research Review Committee and the Ethical Review Committee of icddr,b (Study Protocol Number-PR-16056). Informed written consent was obtained from the participants before enrollment of the children into the study and conducting the interviews with participants.

Consent for publication

Permission to publish this paper was obtained from the Senior Division Director, Nutrition and Clinical Services Division, icddr,b, Dhaka, Bangladesh.

Competing interests

The authors declare that they have no competing interests.

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Tables

Table 1 Participant and Households Characteristics

ID	Children characteristics						Mothers characteristics					Households cha	
	Nutritional status	Age (months)	Sick since birth?	Other illness at admission	Sex	Caregiver	Age (years)	# of kids	Marital status	Educati-on	Employment status	Family structure	Siz
Urban													
HH52	SWK	14	Yes	Diarrhoea, fever	Girl	Mother	20	3	Married	Illiterate	Housewife	Nuclear	5
HH53	SWK	6	Yes	Diarrhoea	Boy	Mother	20	1	Divorced	Primary	None	Extended	8
HH54	NW	15	No	N/A	Boy	Mother	20	1	Married	Illiterate	Housewife	Nuclear	3
HH55	SWK	4	Yes	Diarrhoea	Girl	Maid servant	19	1	Married	Primary	Garment worker	Nuclear	4
HH51	MW	8	Yes	Diarrhoea, fever	Boy	Mother	17	1	Married	Primary	Housewife	Nuclear	3
HH59	MW	4	Yes	Diarrhoea ,fever	Girl	Mother	17	1	Married	Primary	Housewife	Extended	5
HH60	SWK	8	Yes	Diarrhoea, pneumonia	Boy	Mother in low	35	3	Married	Illiterate	Small business	Nuclear	5
HH61	NW	11	No	N/A	Girl	Mother	27	3	Married	Primary	Housewife	Nuclear	5
HH62	MW	4	Yes	Diarrhoea, pneumonia	Boy	Mother	35	3	Married	Illiterate	Housewife	Nuclear	5
HH63	SWK	7	Yes	Diarrhoea, pneumonia	Girl	Aunt	19	1	Divorced	Secondary	-	Extended	4
Rural													
ID	Children characteristics						Mothers characteristics					Households cha	
	Nutritional status	Age (months)	Sick since birth?	Other illness at admission	Sex	Caregiver	Age (years)	# of kids	Marital status	Education	Employment status	Family structure	Siz
HH04	SWK	10	Yes	Diarrhoea , fever	Girl	Mother	20	3	Married	Secondary	Housewife	Extended	9
HH06	NW	17	No	N/A	Girl	Mother	21	1	Married	Secondary	Housewife	Nuclear	3
HH07	SWK	5	Yes	Diarrhoea	Boy	Mother	26	2	Married	Secondary	Housewife	Extended	10
HH09	SWK	3	Yes	Diarrhoea	Boy	Mother	20	1	Married	Primary	Housewife	Extended	4
HH11	NW	6	No	N/A	Girl	Mother	27	3	Married	Primary	Housewife	Nuclear	5
HH12	SWK	9	Yes	Diarrhoea	Girl	Mother	23	2	Married	Secondary	Housewife	Nuclear	5
HH13	NW	8	No	N/A	Girl	Mother	22	2	Married	Secondary	Housewife	Extended	5
Hh10	SWK	14	Yes	Diarrhoea, fever	Girl	Mother	35	3	Married	Secondary	Housewife	Nuclear	5
HH01	MW	11	Yes	Diarrhoea, fever	Boy	Mother	23	3	Married	Secondary	Housewife	Extended	9
HH02	MW	6	Yes	Diarrhoea, fever	Boy	Mother	24	2	Married	Secondary	Housewife	Nuclear	4
HH03	MW	11	Yes	Diarrhoea	Girl	Mother	25	2	Married	Primary	Housewife	Nuclear	4
HH05	MW	16	Yes	Diarrhoea	Girl	Mother	33	3	Married	Secondary	Housewife	Extended	6

Table 2 Gender Framework (power relation and drivers of inequality)

Content	In households/communities	In health services/facilities/system
Who has what?	-Husbands, fathers and elders typically have control over resources in households, including income women have earned -Married women often cannot access household resources, influencing their ability to independently follow hospital and health worker advice	-There are fewer female than male medical practitioners (physicians) employed in (especially rural) health facilities, contributing to some discomfort in women accessing those facilities for themselves and their children. - Most CHWs are female; some fathers are dismissive of their advice
Who does what?	-Women/mothers have multiple domestic tasks in the home, including childcare. Some (especially in urban areas) also earn an income. Traditionally young lactating mothers feed themselves last in a household. -Especially young mothers may have to hand over child's care to others in the household after discharge	-Hospitals and health centres are seen as a women's domain; men generally do not feel comfortable staying in facilities with their children, even if their wife is earning -Some CHWs are not welcome in homes, particularly where they are seen by men to be undermining their relationship with their wives
How are values defined?	- Men generally seen as heads of households and main breadwinners, and women as child carers - Young women's views/knowledge on child health etc generally less valued than men's and elders; women sometimes blamed for a child's condition for failing in her ascribed roles - Boys sometimes seen to have greater potential as breadwinners and future support for the family than girls, and so prioritized over girls in access to food, medicine & treatment	-Linked to the way in which values are defined in households/ communities, caring roles in the health professions are possibly seen as more appropriate and feasible than clinical leadership positions - Positions which can be isolated or need other family members to accompany the job holder (like postings to rural facilities) can be considered more appropriate for men than women
		-Husbands and household elders can influence women's ability to access medical practitioners and CHWs -There may be greater eagerness or pressure on mothers to get out of hospitals and back to homes where boys are left at home, and where girls are admitted
	- Women reported that they were rarely able challenge gender based decision-making norms regarding childcare and treatment because doing so is considered unacceptable socially and culturally.	