
How to do (or not to do) . . . gender analysis in health systems research

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Abstract

Gender—the socially constructed roles, behaviours, activities and attributes that a given society considers appropriate for males, females and other genders—affects how people live, work and relate to each other at all levels, including in relation to the health system. Health systems research (HSR) aims to inform more strategic, effective and equitable health systems interventions, programs and policies; and the inclusion of gender analysis into HSR is a core part of that endeavour. We outline what gender analysis is and how gender analysis can be incorporated into HSR *content, process and outcomes*. Starting with HSR content, i.e. the substantive focus of HSR, we recommend exploring whether and how gender power relations affect females and males in health systems through the use of sex disaggregated data, gender frameworks and questions. Sex disaggregation flags female–male differences or similarities that warrant further analysis; and further analysis is guided by gender frameworks and questions to understand how gender power relations are constituted and negotiated in health systems. Critical aspects of understanding gender power relations include examining *who has what* (access to resources); *who does what* (the division of labour and everyday practices); *how values are defined* (social norms) and *who decides* (rules and decision-making). Secondly, we examine gender in HSR process by reflecting on how the research process itself is imbued with power relations. We focus on data collection and analysis by reviewing who participates as respondents; when data is collected and where; who is present; who collects data and who analyses data. Thirdly, we consider gender and HSR outcomes by considering who is empowered and disempowered as a result of HSR, including the extent to which HSR outcomes progressively transform gender power relations in health systems, or at least do not further exacerbate them.

Key words: framework, gender, gender analysis, health systems, health systems research

Key Messages

- Health systems are not gender neutral; gender is a key social stratifier, which affects health system needs, experiences and outcomes.
- Gender influences how people interact dynamically in complex, multi-faceted and context-specific ways, reflecting varying interests, values and power, and therefore is at the core of health and health systems research (HSR).
- Gender analysis can be incorporated into HSR *content* through sex disaggregation of data, and incorporation of gender analysis frameworks and questions; into HSR *process* by reflecting on how HSR itself is imbued by power relations during data collection and analysis; and into HSR *outcomes* by supporting how power relations in health systems can be transformed progressively or at least not exacerbated.
- Stronger HSR leads to better recommendations, more strategic interventions and programs and more effective policies; the inclusion of gender analysis into health systems research is a core part of that endeavour.

Introduction

Health systems are not gender neutral; gender is a key social stratifier, which affects health system needs, experiences and outcomes (Standing 1997; Jackson *et al.* 2006; Nowatzki and Grant 2011). Gender is defined as the ‘socially constructed roles, behaviours, activities and attributes that a given society considers appropriate for men and women’ (WHO 2015). As a social phenomenon, the meaning of gender is negotiated by individuals and societies and therefore varies over time and across contexts; in contrast to sex, which refers to the chromosomal characteristics that distinguish men, women and intersex people (Sen *et al.* 2007). Gender affects how females, males and people of other genders live, work and relate to each other at all levels, including in relation to the health system. As a power relation, it influences: vulnerability to ill-health; household decision-making and health seeking behaviour; access to and utilization of health services; the design and use of medical products and technology; the nature of the health labour force; the implications of health financing; what data is collected and how it is managed; and how health policies are developed and implemented (Standing 1997; Vlassoff and Moreno 2002; Sen *et al.* 2007; George 2008; Percival *et al.* 2014).

The World Health Organization (2007: 2) defines a health system as ‘all organizations, people and actions whose primary intent is to promote, restore or maintain health’. Health systems frameworks are evolving (van Olmen *et al.* 2012), with concepts related to systems thinking and people-centeredness most recently defining certain health systems characteristics. Systems thinking highlights the complex, dynamic, context-specific, multifaceted and interconnected nature of health systems and their components (Adam and de Savigny 2012). People-centeredness emphasises how health systems are ‘constituted by people and operate in social, political and economic contexts defined by people and groups’ with varying interests, values and power (Sheikh *et al.* 2014: 2). As gender influences how people interact dynamically in complex, multi-faceted and context-specific ways, reflecting varying interests, values and power, gender is at the core of health systems and hence should be within the heart of health systems research (HSR).

Yet, HSR often fails to sufficiently consider gender as a social relation (Standing 1997). When gender analysis is incorporated into HSR, it is often incomplete either focusing on females only (Percival *et al.* 2014), or not going beyond sex disaggregation (Johnson *et al.* 2009; Nowatzki and Grant 2011). Both of these approaches ignore the socially constructed power relations and gender norms that exist between and among males, females and other genders that can lead

to vastly different health system needs, experiences and outcomes (Hunt 2004; Sen *et al.* 2007; Nowatzki and Grant 2011).

Moving forward, gender analysis in HSR entails researchers seeking to understand gender power relations and norms and their implications in health systems, including the nature of female’s and male’s lives, how their needs and experiences differ within the health system, the causes and consequences of these differences, and how ‘programs, services and policies might be better organized to ameliorate, accommodate or redress the differences among them’ (Jackson *et al.* 2006). As well as analysing differences between females and males, gender analysis, by focussing on the nature of power relations, also considers differences among females and among males. It includes examining gender in relation to other social stratifiers, such as class, race, education, ethnicity, age, geographic location, (dis)ability and sexuality, ideally from an intersectional perspective (Bottorff *et al.* 2011; Hankivsky 2012). An intersectional perspective examines how these markers dynamically interact, exploring how power plays out at multiple levels and through diverse pathways to frame how vulnerabilities are experienced.

Incorporating gender analysis into HSR should ideally be done at all stages of the research process. It includes considering gender when defining HSR aims, objectives, or questions; within the development of study designs and data collection tools; during the process of data collection; and in the interpretation and dissemination of results (Ravindran and Kelkar-Khambete 2008; Johnson *et al.* 2009). In this article, we outline how gender analysis can be incorporated into HSR *content*, *process* and *outcomes*. While we review gender within each HSR area separately, we recognize that they interact, overlap and reinforce one another; and an approach that takes forward gender within these areas is mutually reinforcing. We also note that while other genders need to be considered within gender analyses, this article deals primarily with relations between males and females.

Gender analysis in HSR content

HSR content refers to the substantive focus of HSR, whether it be financing, or human resources for health, etc. A starting point for understanding how gender power relations substantively affects males and females differently in health systems, entails applying sex-disaggregation, gender frameworks and gender analysis questions into HSR content.

Sex-disaggregated data and information as a trigger

To incorporate gender analysis into HSR, data and information must first be disaggregated by sex. Collecting sex-disaggregated data

means distinguishing between males and females when gathering information, and ensuring that this information is recorded and maintained (Hunt 2004; Nowatzki and Grant 2011). In some contexts, it will also be important to go beyond the male-female binary and include options for other groups, such as transgender and inter-sex populations. Disaggregating data by sex is critical as aggregated datasets can mask differences between males and females, leading to assumptions that males and females share the same experiences—a bias which negatively affects the validity and reliability of research evidence (Johnson *et al.* 2009; Nowatzki and Grant 2011).

For example, not reporting sex as a variable in health labour force surveys or human resources for health studies conceals the gendered composition of the health workforce (George 2008). Looking across occupations, those at the lower tiers of the health workforce, which require less education and have less employment security and earning potential, have higher proportions of women. In addition, within the same occupation, and at times even in female dominated health cadres, women are often promoted less frequently and earn less than men (George 2008; Newman 2014). Research that does not disaggregate data by sex could therefore generate evidence that fails to adequately portray the true nature of the health workforce, leading to policy which fails to consider gendered drivers of inequality. For example, during the development of lay health worker policy in South Africa, while poor working conditions were recognised, the gendered basis of that inequality (assumptions that women can volunteer their time, structural and labour market discrimination that left women with few employment options, failure to prioritize women's career pathways) failed to gain policy attention (Daniels *et al.* 2012). Similarly, not disaggregating data by sex fails to recognize how men's higher disease burdens for certain conditions are linked to gender-related norms which promote high risk behaviour such as smoking and alcohol consumption (Sen *et al.* 2002; Hawkes and Buse 2013).

In addition to sex, data should also be disaggregated by other social stratifiers, such as age, race, ethnicity, disability, socioeconomic status and geographic location, depending on the context and issues under consideration. Gender analysis, however, goes beyond merely disaggregating by sex and other social stratifiers. Researchers must use such disaggregation as a trigger that, with the appropriate frameworks and questions, can spark further investigation of how social inequalities lead to different experiences within health systems, and/or can be further entrenched or reversed by health systems (Gilson *et al.* 2007). As collecting and analysing additional data within health information systems can meet with resistance due to the extra human and financial resources, as well as time required for the large sample sizes needed to significantly detect social biases across different axes, there is a clear need to demonstrate the importance of collecting this information and using it to promote change.

Gender frameworks as analytical guides

In further examining gender inequities, gender frameworks can help researchers further organise their thinking, research questions, data collection, and analysis. Within the context of HSR, researchers new to gender may find gender frameworks particularly useful in helping to focus their thinking on key aspects of gender power relations which are most relevant to their study. With the diversity and dynamic nature of substantive issues addressed by HSR, any framework used may need further adaptation to be fully effective in understanding the complex power relations that characterise gender within health systems. When choosing or adapting a framework it is important to understand its underlying principles or theoretical underpinnings, as each framework will differ in its assumption of

what needs to be analysed and addressed, some of which are discussed below (Warren 2007).

In developing this article, we found 42 gender frameworks, guidelines and tools developed by a variety of agencies and organisations. Focussing on frameworks only, we found 15 that focussed on health, health systems and development (Table 1). Many of these earlier documents focus on development, reflecting how gender analysis has been debated and reviewed in development studies since the 1970s (Boserup 1970), in contrast to its relatively nascent recognition in health systems (Standing 1997). Earlier frameworks guided analysis that highlighted women's instrumental role in development, i.e. how projects would be more efficient after considering women's contributions (Harvard Analytical Framework in March *et al.* 1999). Others helped distinguish between women's reproductive, productive and community roles, as well as how women had strategic needs linked to the distribution of power that were different from immediate practical needs (Moser 1993). Some focussed on the social relations and institutions that govern gender relations inhibiting broader wellbeing and empowerment (Kabeer 1994). Overtime frameworks have identified how gender norms, beliefs, roles, time allocation, division of labour, access to resources, and rules and decision making constitute gender power relations.

Drawing on this history, we present our own gender framework below, and discuss how it can be operationalized within HSR. We argue that gender as a power relation and driver of inequity in health systems can be understood by how power is constituted and negotiated (Table 2). Key domains that constitute gender power relations can be understood by asking *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). These domains are not static, but are actively fostered, maintained or contested, in intended and unintended ways, as gender power relations within health systems are negotiated by people and their environments. For example, even as policies recommended recruitment of women as paid community health workers in Mozambique due to their work relating to newborn and child health, communities prioritized men as being more in need of paid employment (Chilundo *et al.* 2015). In this case while there was a supportive policy, it was subverted by the gendered selection of paid CHWs by communities. On the other hand, in Bangladesh, female community health workers reinterpreted conservative social norms in ways that enabled them to continue their work in family planning (Simmons *et al.* 1992), and in rural Uganda a voucher program inadvertently encouraged male transport drivers to ensure continuity of antenatal and postnatal visits (Ekirapa-Kiracho *et al.* 2011). In these latter two cases, individuals reshaped broader conservative social norms or further reinforced program effects to improve women's health.

Gender analysis questions as entry points for further understanding

Triggered by the results of sex-disaggregated data and informed by gender frameworks, gender analysis questions help researchers move beyond detailing differences between females and males, to further examine why and how power relations cause inequities between males and females in health systems interactions. To stimulate further thinking about how to incorporate gender analysis into HSR content, gender analysis questions within HSR are organized in relation to the four domains for understanding gender as a power relation mentioned within the framework presented in Table 2. While the questions are structured around the WHO's six building blocks

Table 1. Gender frameworks

Health/health systems gender frameworks	Development gender frameworks
<ul style="list-style-type: none"> • Guide for analysis and monitoring of gender equity in health policies (PAHO, 2009). • Health Finance & Governance Project: Gender Framework (Health Finance & Governance Project 2012) • Addressing Gender and Women's Empowerment in mHealth for MNCH: An analytical Framework (Deshmukh and Mechael 2013) • Guidelines for the Analysis of Gender and Health (LSTM 1996) • A Manual for Integrating Gender Into Reproductive Health and HIV Programs (Caro 2009) 	<ul style="list-style-type: none"> • Gender Integration Framework (FHI 360 2012) • Harvard Analytical Framework developed by the Harvard Institute for International Development (March et al. 1999) • Gender analysis matrix (Parker 1993) • Capacities and vulnerabilities analysis framework (Anderson and Woodrow 1989) • Women's empowerment (Longwe) framework (Longwe 1991) • Social Relations Approach (Kabeer 1994) • Moser Framework (Moser 1993) • Framework for People-Oriented Planning in Refugee Situations (adaptation of Harvard Framework) (Anderson et al. 1992) • Rapid Gender Analysis Framework developed by the Ministry for Foreign Affairs (Finland) (Vainio-Mattila 2001) • Gender Analysis Framework developed by the Forests, Trees and People Programme of the FAO (Vainio-Mattila 2001)

Table 2. Gender as a power relation and driver of inequality

What constitutes gendered power relations	
Who has what	Access to resources (education, information, skills, income, employment, services, benefits, time, space, social capital etc.)
Who does what	Division of labour within and beyond the household and everyday practices
How are values defined	Social norms, ideologies, beliefs and perceptions
Who decides	Rules and decision-making (both formal and informal)
How power is negotiated and changed	
Individual/People	Critical consciousness, acknowledgement/lack of acknowledgement, agency/apathy, interests, historical and lived experiences, resistance or violence
Structural/Environment	Legal and policy status, institutionalisation within planning and programs, funding, accountability mechanisms

(service delivery, human resources, health financing, leadership/governance, information and research and medical products/technologies) (WHO 2007), we recognize the interconnected and overlapping nature of each health system component.

Gender analysis in HSR process

Incorporating gender analysis into the research process includes understanding how the research process itself can be imbued with

power relations and biases. A critical review of HSR as a system itself, for example, may reveal gender and other social biases in terms of: who funds research and owns it; who governs and sets research agendas; whose capacity is built to carry out research and use it; which methodologies are valued; and how findings are disseminated and to whom. In this section of the article, we use the example of data collection and analysis as a part of the research process, to illustrate how researchers need to consider how gender as a power relation influences: who participates as respondents; when data is collected and where; who is present; who collects data; and who analyses data (Hunt 2004).

Who participates as respondents

Individuals can be excluded due to gender power relations. Who participates as a respondent needs to be defined at the outset according to what data is needed to answer the research questions. In many contexts there are significant gaps in education and literacy between and among females and males, with females possessing lower education and literacy levels compared to men overall, as well as having different levels of proficiency in national languages (as opposed to local or ethnic languages). If research involves interaction with technology, such as mobile phones or tablets, females may participate less due to the literacy or language proficiency needed to use such technology (Deshmukh and Mechael 2013). Female respondents may also need to seek additional permissions to travel to research locations to participate in focus group discussions (FGDs), have less leisure and privacy, and have more gatekeepers inhibiting their participation in research (Anderson de Cuevas et al. 2014). In addition, in many contexts men may find it particularly stigmatising to discuss their experiences of being victims of sexual violence and be less likely to participate as respondents. Such topics can be equally stigmatising for women. In such instances care needs to be given to issues of confidentiality and privacy, as well as considering the sex of the data collectors. Where possible, respondents should be given information about where to seek additional support.

An intentional strategy is therefore required to identify and respectfully access the right kinds of respondents. Data collectors must therefore be trained to ensure that they not only seek the most appropriate respondents during data collection, but that they give clear criteria regarding who they want to speak with and how to engage them without violating their rights to participate or not in research.

Table 3. Illustrative gender analysis HSR questions

Health system area		Illustrative gender analysis research questions
Service delivery, including access and utilization	Access to resources	<ul style="list-style-type: none"> To what extent do health facilities provide services with appropriate conditions (with functioning toilets, bathing areas for inpatient facilities, shelter from sun/rain in the waiting area) and with appropriate staff for all populations? Do sexual and reproductive health services provide services to both men and women? Are they available to those who are unmarried or widows/widowers? To what extent are marginalized populations (transgender people, ethnic minorities, migrants, inhabitants of informal settlements, people employed in illegal occupations, etc.) able to access relevant information and care? What are the barriers that affect their access? How does gender interact with these other forms of marginalisation among these communities to affect access to health care? Do women have to endure waiting periods or have their cases reviewed by multiple providers before accessing safe abortions? Do women dependent on government funding face more restrictions, than women who can afford private abortion services? Are there services for gender-based violence such as domestic violence?
	Division of labour and everyday practices	<ul style="list-style-type: none"> To what extent are maternal and child health outreach visits or clinics organised considering women's agricultural, economic, or caretaking activities in their communities? How do women's social roles, such as childcare and infant feeding, affect their access to and utilization of health facilities?
	Social norms	<ul style="list-style-type: none"> Do services encourage the participation of men in women's and children's health? If yes, how and on what terms? To what extent are certain health conditions normalised (e.g. reproductive tract infections)? Do providers normalise irrational use of certain procedures (e.g. oxytocin to induce labour, caesarean sections that are not medically indicated)? How does stigma inhibit certain male or female populations more than other groups?
	Rules and decision-making	<ul style="list-style-type: none"> Who decides whether and how much to allocate household resources to pay for health care services? Do women require the permission of a male partner or relative to access a healthcare facility? To what extent are there policies in place guiding health services to be more gender-responsive? Do they have review procedures to ensure follow up?
Human resources	Access to resources	<ul style="list-style-type: none"> Are maternal death audits mandated? Are they transparent? To what extent do women and men have the same access to educational and training opportunities? To what extent do family support and roles help or limit opportunities for training by gender, marital status or parity? Are there sex differences in relation to remuneration, promotion, job security, working hours and benefits across and within all types of health workers? How does this interact with marital status, parity or sexual orientation? Do performance-based incentives mean the same thing for female and male health workers across and within cadres? To what extent is retention in rural areas more or less of a problem for female or male health workers? Is retention over time more or less of a problem for female or male health workers? Does this differ by marital status, parity, type of partner?
	Division of labour and everyday practices	<ul style="list-style-type: none"> To what extent are women more or less likely to work in frontline service delivery in poorly compensated (including volunteer) or less supported positions than men? To what extent are women more or less likely to work in management positions than men?
	Social norms	<ul style="list-style-type: none"> Are female and male health providers recognised differently? To what extent are female providers expected to provide more emotional support than male providers? To what extent are female providers less likely to ask for promotions and less likely to complain about poor working conditions than male providers due to less assertive social norms?

Table 3. Continued

Health system area	Illustrative gender analysis research questions
	<p>Rules and decision-making</p> <ul style="list-style-type: none"> • Are there female members and workers from across the health workforce hierarchy on committees that adjudicate over sexual harassment in the health workforce? • Has gender been mainstreamed into human resource policy, and if so how, with what impact? • Are there policies in place—and implemented—to effectively address sexual harassment against health workers? • To what extent are there adequate maternity, paternity and family leave policies for both female and male health workers at all levels?
Health financing	<p>Access to resources</p> <ul style="list-style-type: none"> • Are girls, women, boys or men more or less likely to know about user fees exemptions, cash transfer entitlements and health insurance benefits? • To what extent are services that are needed by only some populations included in performance-based incentive programs or health insurance plans? Do insurance packages include services exclusively used by women, such as maternal health? Do they include services for men's sexual and reproductive health? • To what extent do user fees or the removal of user fees have more impact on women from marginalised groups, because they have less access to cash? • Have sex-disaggregated information on out-of-pocket expenditures on health been obtained? What services incur the greatest out-of-pocket expenditures for men and women? And what is the impact on individuals and households?
	<p>Division of labour and everyday practices</p> <ul style="list-style-type: none"> • To what extent are services provided by female vs. male health workers more likely to be included in performance-based incentive programs? • To what extent are girls, women, boys or men more or less likely to work in jobs that offer health insurance? • To what extent is insurance coverage available to people who work in the informal sector, in paid domestic service, in seasonal or part-time work, or unpaid home-based carers? Are women from marginalised groups more likely to be found in these types of work?
	<p>Social norms</p> <ul style="list-style-type: none"> • To what extent are women or other marginalised groups less likely to follow up on financial claims because of less assertive social norms, or a history of government discrimination? • Are health workers in public facilities more likely to respond to certain groups of clients based on perceived ability to pay, gender etc.
	<p>Rules and decision-making</p> <ul style="list-style-type: none"> • Who designs insurance policies? Are women involved or people from marginalised groups? • Who designs exemptions or waivers from payment? Is it mostly male managers? • To what extent are health budgets publically debated by political parties? Are these political parties skewed by gender or other social determinants? • Do insurance policies require levels of paperwork and verification that are not possible for marginalised groups? • To what extent is health spending made public at different health system levels and who has the right to access such data?
Leadership/Governance	<p>Access to resources</p> <ul style="list-style-type: none"> • Who is more likely to have information about health entitlements? • Who is more likely to have higher literacy levels and access to social capital enabling them to participate more effectively in health committees and other forms of health planning? • Who is more likely to have access to transport to travel to headquarter locations to participate in health planning processes? • To what extent have those in leadership positions received training in gender sensitivity or gender mainstreaming? <p>Division of labour and everyday practices</p> <ul style="list-style-type: none"> • What is the representation of women and men in boards, panels, working groups and other decision-making bodies, or in supervisory and management positions? To what extent are there differences by sex and other social markers in participation, decision-making and planning of interventions? • Who is more likely to vote and how does this influence political priorities for health? Who engages with policy makers at the local and national level?

Table 3. Continued

Health system area	Illustrative gender analysis research questions	
Information and research	Social norms	<ul style="list-style-type: none"> • Does having more female legislators ensure more support for women's health services, like safe abortion? If yes, how? • To what extent are men or women more or less likely to register complaints or participate in accountability initiatives due to social norms around assertiveness? • To what extent are women or other marginalised populations less able to advocate for their health needs?
	Rules and decision-making	<ul style="list-style-type: none"> • To what extent do policies exist to ensure that females are represented on decision-making bodies? • To what extent do structures at the community level (including community health workers) have the opportunity to feed into decisions and priority setting in the health sector?
	Access to resources	<ul style="list-style-type: none"> • Who has access to the skills, devices and technology that transmits and processes health information? How do they use this information? • Who gets to do HSR and can access research scholarships?
	Division of labour and everyday practices	<ul style="list-style-type: none"> • Who bears the burden of routine data collection in health systems, and do these frontline workers have the capacity, time and support to do so effectively? To what extent are there gender differences?
	Social norms	<ul style="list-style-type: none"> • Who supervises data collection and are they given gender training? • What kind of social norms permeate medical text books and are they discriminatory? • To what extent are people from stigmatised groups less likely to respond to data collection efforts? • Does conservative gender bias make reporting on rape, violence against women, or maternal deaths less likely? If yes, in what way? • To what extent do information systems have mechanisms for detecting and treating domestic violence?
	Rules and decision-making	<ul style="list-style-type: none"> • Who decides what data is collected and how health system performance is measured? Do indicators include issues that may differ by men and women? • How accessible is routine health information and are there policy measures that ensure transparency? • To what extent are there confidentiality measures in place to protect the rights of marginalised or stigmatised groups?
Medical products/ technologies	Access to resources	<ul style="list-style-type: none"> • To what extent do women have sufficient literacy, autonomy and ICT access to effectively use mHealth interventions or other medical projects? • To what extent is protective health equipment and gear made to fit bodies that are not the male standard? • How is the financing for commodities required specifically by women different than those needed specifically by men?
	Division of labour and everyday practices	<ul style="list-style-type: none"> • How do men's and women's roles and responsibilities affect use of products (e.g. bed nets, vaccinations)? • What are the challenges different groups of women and men face in adhering to long term treatment (e.g. for tuberculosis or HIV)? Are they appropriately supported within health systems and community based structures?
	Social norms	<ul style="list-style-type: none"> • How do women and men within households and communities prioritise individuals' access to medical technologies, e.g. are boys or girls more likely be prioritised for oral rehydration therapy (ORT)? • To what extent are female providers less or more likely to be risk averse and therefore more likely to use protective equipment than male providers? Does this differ across and within cadres?
	Rules and decision-making	<ul style="list-style-type: none"> • Which cadres are authorised to prescribe and distribute certain drugs or commodities and is there a gender difference? If yes, in what way? • To what extent does regulation stand in the way of making certain commodities more widely accessible for women or marginalised groups, (e.g. medical abortion, blood)? • What is the effectiveness of regulatory mechanisms to ensure that medical products for women or other marginalised groups are not misused, (e.g. oxytocin to augment labour)?

Power relations can also inadvertently skew research towards those respondents who are the most visible subjects, without including the less visible gatekeepers or decision-makers that frame the contexts in which those subjects live and work. For example, males and other influential family members are often excluded from research which focuses on female's health needs, such as maternal and child health, sexual and reproductive health, or family planning. Yet male partners and head of households play a large role in female's health-seeking behaviour due to their decision-making role, despite at times lacking adequate knowledge (Kululanga *et al.* 2011; Thapa and Niehof 2013). Research processes need to engage and triangulate data from gatekeepers or decision-makers, without further disempowering females or other marginalised groups.

When data is collected and where

Females and males have different responsibilities in relation to work and family life, and as a result, may be available at different times of the day. For example, females often have a double-burden in relation to work and home life which may affect their ability to participate within a study. To avoid excluding females from the research process, or negatively impacting them or their relations with those at home, it is therefore important to choose a convenient time and place in which to engage in data collection (Hunt 2004). Similar considerations should also be made when engaging men.

Who is present

It is important to consider who is present in the room while collecting data, whether it be during an interview, FGD, or survey. If both males and females are present this may change the quality and accuracy of the data collected, as each may be reluctant to share information about their lives and work, or their views about gender relations. Females may also remain silent when males are in the room, even when they disagree or inaccurate information is provided (Hunt 2004). In healthcare settings, it is important to consider how health system hierarchies combine with gender to mediate dynamics between patients, health providers and managers. For example, a healthcare worker may be reluctant to speak up if a female/male superior is present, or a patient may be unwilling to provide sensitive information if a healthcare worker of the same or opposite sex is present. Being aware of power relations, and how gender adds to them, will determine how to group respondents. Researchers should therefore have specific strategies to ensure that they conduct interviews and surveys in private (i.e. with no-one else present) whenever possible, and conduct separate FGDs with males and females.

Who collects data

The gender of the person collecting data can impact on the quality and accuracy of the information received. In some cultures females and males may not be comfortable, or may feel it is inappropriate, to share information with someone of the opposite gender. Just as the data collector's gender can impact the quality of the data, so too can age, class, ethnicity, and occupation and it is important to consider how the characteristics of data collectors may bias responses. The gender of the person collecting data may also determine getting access to collect data; for example, in many contexts only female data collectors will be allowed to enter homes or will be allowed to collect anthropometric measurements of women and children.

Training men and women to collect data from their own communities is one way to increase the overall accuracy of the findings and reduce bias (Hunt 2004; Nieuwenhoven and Klinge 2010). For

studies which include sensitive data (e.g. income, reproductive health, gender-based violence), however, respondents may not want to share this information with those from their community. In addition, local data collectors may be unable to recognise their own gender biases when collecting data, or be less willing to question or challenge gender biases of others involved in the research. All data collectors must therefore receive adequate training and supervision to help them become aware of their gender biases and to try to minimize these biases within the research process. Processes that support reflection on data collection are critical, such as joint reviews of transcripts and debriefing meetings among team members, to identify potential bias and check assumptions regarding gender.

Who analyses data

Researchers' own underlying gender biases and assumptions may also affect data analysis and results reported. Appropriate training and seeking opportunities to engage different perspectives, including from participants on their view of emerging themes, are ways to ensure the research reflects the ground realities examined.

Gender in HSR outcomes

Incorporating gender into HSR outcomes includes considering who is empowered and disempowered by the results of HSR, including the extent to which HSR progressively transforms gender power relations in health systems, or at least does not further exacerbate them. One way in which HSR can focus on transformation is through the use of participatory action research (PAR). Health systems researchers recently formally acknowledged the contributions of PAR to strengthening health systems (Loewenson *et al.* 2014; Lehmann and Gilson 2014). PAR seeks to engage participants not just as passive respondents, but as those best placed to understand their context, and engages them to act and reflect on self-identified problems or issues (Corbett *et al.* 2007). While PAR highlights the centrality of power in the construction of knowledge, and challenges researchers to reflect on and redress the power imbalances within research, the role of gender power relations have not always been considered (Cornwall and Jewkes 1995). Subsequently, 'the centrality of male power' has been recognized as a core component of all contexts by feminist PAR (Corbett *et al.* 2007: 84; Ponc *et al.* 2010), alongside the understanding that discrimination against women is experienced differently depending on context specific social stratifiers (Corbett *et al.* 2007).

While not all HSR may be able to, or need to, directly transform gender relations through feminist PAR or other approaches, at the very least it should aim to ensure that no gender harm is caused; i.e. that negative gender and health system outcomes are not ignored or aggravated. A participant's involvement within a HSR project or intervention may affect their relationship with their partner, coworkers or community members in adverse ways. In certain contexts, by not addressing gender power relations, increased domestic violence, abuse, or partner control was an unintended consequence of mHealth interventions because they improved women's access to information and resources, without taking into consideration men's control over these elements (Deshmukh and Mechael 2013; Jennings and Gagliardi 2013). In addition, when undertaking data analysis and dissemination, consideration needs to be made of how males and females are portrayed, so that harmful gender stereotypes are not replicated. Strategies to monitor and address these unintended gender inequities in HSR outcomes must be in place, and it is vital that all HSR considers the underlying structures and norms that

perpetuate gender power imbalances, even if they do not strive to actively address them (IGWG 2009).

Conclusion

Gender analysis is important for HSR. All too often the inclusion of gender is regarded as a 'tick-box' exercise, or it is considered an 'add-on' to HSR, an extra task that is sometimes considered irrelevant or not worthwhile. When gender is included, it often fails to go beyond sex disaggregation, with little consideration given to how gender power relations replicate or transform inequities within health systems. While not all research needs to have a direct focus on gender, it is important that gender is considered and incorporated so that the evidence collected accurately reflects the power relations that exist within the HSR topic under consideration, the research process does not perpetuate and reinforce gender inequalities itself, and if possible, the research outcomes include a positive transformation of gender relations and a reduction in gender inequity. Stronger HSR leads to better recommendations, more strategic interventions and programs and more effective policies; the inclusion of gender analysis into HSR is a core part of that endeavour.

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