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Body mapping as a participatory method to explore health provider beliefs and understanding about sexual and reproductive health and rights in Timor-Leste



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ABSTRACT

Understanding the attitudes, knowledge, and practice of a health provider towards sexual and reproductive health (SRH) can provide valuable insight about how a primary health care system is functioning, and if it is meeting the SRH needs of its population. We conducted collaborative, participatory, and operational research to explore access to male methods of family planning in The Democratic Republic of Timor-Leste (Timor-Leste), from a health provider perspective. We conducted in-depth interviews (IDIs) with 24 health providers in 2019. Fifteen midwives, four doctors, three nurses and two family planning counsellors participated (16 women, 8 men; aged 25–56 years). IDIs comprised of semi-structured open-ended questions followed by body mapping activities. Moving from open-ended questions to body mapping activities enabled participants to engage with the research questions in complimentary but different ways, resulting in more in-depth and insightful data. The body mapping activities provided flexibility, time and scope for participants to reflect on their beliefs and practices in a more detailed and tangible way, and in ways they controlled and found acceptable. Data were analysed using reflexive thematic analysis. The body mapping method helped to demonstrate there was limited knowledge and experience about male SRH amongst health providers participating in our study, with many expressing interest to upskill in this area. Insights from our research can be used to inform health policy and programmatic decision-making in Timor-Leste. We conclude that when used appropriately, body mapping is an effective participatory research tool that can be used with health providers to explore SRH.

1. Introduction

The core competencies health providers require in order to 'protect, promote and provide' sexual and reproductive health (SRH) services cut across health provider attitudes, tasks, knowledge and skills (World Health Organisation, 2011). While the desirable core competencies are universal, the approach and specifics of different competencies will vary based on context, influenced by numerous factors including governance systems, national policies and laws, and education systems. Understanding how health providers practise these desired core competencies can provide unique and valuable insight about how a primary health care system is functioning, and if it is meeting the SRH needs of its population. Indeed, defining and measuring the expected core competencies of a health provider is essential for producing quality health policy, planning, training, and programming (World Health Organisation, 2011). However, while some competencies may be reasonably simple to define and measure across and within contexts (for example, the technical competence of a health provider to correctly insert a contraceptive implant) other competencies focused on provider attitudes or beliefs may be more varied and complex to define and measure. To facilitate open, honest and

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in-depth understanding of health provider attitudes and beliefs, respectful and non-judgemental methods of investigation are needed. In this paper, we describe our use of body mapping research methods, in conjunction with open-ended questions, to gain deeper insights and understanding about SRH service provision in The Democratic Republic of Timor-Leste (Timor-Leste).

1.1. Study context

Timor-Leste is a small, diverse, and relatively new nation in South-East Asia, emerging from centuries of colonisation by Portugal and decades of violent occupation by Indonesia, Japan and Australia (Government of the Democratic Republic of Timor Leste, 2021; World Health Organisation, 2022). Following a referendum for independence in 1999, Timor-Leste was administered by a United Nations mission until full independence was restored in 2002 (Government of the Democratic Republic of Timor Leste, 2021). Now with an estimated population of 1.3 million, Timor-Leste has a median age of 20.8 years (United Nations Department of Economic and Social Affairs Population Division, 2019). Most people identify as Catholic (97.6 percent) and live in rural and remote locations (70.6 percent) (General Directorate of Statistics Timor-Leste, 2015). The Timor-Leste experience of rebuilding an effective health system and workforce after conflict has been well documented, highlighting the many technical, social, cultural and political factors that influence health system development over time (Bertone, Martins, Pereira, Martineau, & Alonso-Garbayo, 2018; Cabral, Dussault, Buchan, & Ferrinho, 2013; Mercer, Thompson, & de Araujo, 2014). Through these rebuilding efforts and introduction of a free universal access to health care model, Timorese health outcomes have improved significantly since independence. However, significant challenges in health remain, including around several key SRH indicators.

Modern contraceptive prevalence is low, with only 24 percent of married women of reproductive age using a modern method of family planning (General Directorate of Statistics, Ministry of Health, & ICF, 2018). One in four married women have an unmet need for family planning (General Directorate of Statistics et al., 2018). The family planning method mix, an important SRH indicator of contraceptive method choice, has shown improvements but remains skewed towards contraceptive injectables (General Directorate of Statistics et al., 2018). The majority of family planning users in Timor-Leste are women, as is the case globally. However, while the use of male methods (male condoms, vasectomy, and some natural methods) account for 27.4 percent of all family planning practice worldwide, uptake in Timor-Leste is estimated to be lower (United Nations Department of Economic and Social Affairs, 2019). In 2009 (the most recent estimates available), less than one in ten men were reported to have ever used a male method of family planning (National Statistics Directorate, Ministry of Finance, & ICF Macro, 2010). This means that women in Timor-Leste, like around the world, currently assume most of the health-related, financial, time and other burdens related to family planning use. Increasing men's uptake of family planning services can help reduce this burden on women, while also increasing men's reproductive autonomy and contributing towards a more gender-equitable and just society (Starrs et al., 2018). While studies have explored women's uptake of family planning methods in Timor-Leste (Wallace et al., 2018b), limited evidence exists about access to male methods of family planning. Overall, limited evidence exists about health provider beliefs, attitudes, and knowledge about SRH service provision more generally in Timor-Leste.

1.2. Introduction to body mapping

Body mapping is a creative and flexible art-based tool that can be used to respectfully explore an individual's experiences, perspectives, knowledge, and beliefs (Coetzee, Roomaney, Willis, & Kagee., 2019; Gastaldo, Rivas-Quarneti, & Magalhães, 2018). It is a versatile and interdisciplinary method that has been used widely for therapy, advocacy, research, education, and empowerment initiatives (Boydell, 2020; Coetzee, Roomaney, Willis, & Kagee, 2019). The application of body mapping is diverse, often involving an individual's construction of a life-sized body image through drawing or painting, or using a pre-prepared body map template (Coetzee et al., 2019). A participant is then guided through a series of questions or instructions, prompting them to add to the body map with drawing, writing or other art-based techniques. A discussion or presentation of the completed body map is usually done during or after its construction, to help ensure others understand the meaning and significance of what has been made (Zaman, Mustaque, & Chowdhury, 1998).

Body mapping can also be used in hypothetical or scenario-based approaches, providing the opportunity for people to communicate their beliefs, understanding and experiences without needing to focus on personal disclosure. As a tool, body mapping provides a unique and accessible way for individuals to communicate, making it especially useful for those who may not be able or comfortable to articulate their opinions and thoughts using spoken or written language (Coetzee et al., 2019).

Body mapping is increasingly used in health research, due to its ability to respectfully cross language and cultural barriers to gain emic insights of worldviews, and to explore indigenous belief systems (Gastaldo et al., 2018). As a participatory research method, body mapping can also be used to engage with participants as the co-contributors of knowledge creation, expanding the range of voices and perspectives that are heard within health research (Gastaldo et al., 2018; Smit, Swartz, Bantjes, Roomaney, & Coetzee, 2021). Body mapping can be implemented as a stand-alone activity, or in conjunction with other research methods, such as alongside individual interviews (Ryan, Ussher, & Hawkey, 2022), focus group discussions (Wallace et al., 2018a) and quantitative surveys (Tarr & Thomas, 2011). Body mapping has also been widely used in numerous sexual and reproductive health and rights (SRHR) research and health initiatives, due in part to the gentle and respectful approach that it can provide in exploring sensitive topics. For example, body mapping played a role in the early stages of the HIV and AIDS epidemic, with the method used for therapy, research and advocacy work conducted around people's experience with AIDS (Boydell, 2020). Specifically for enquiries about contraception, body mapping has been used in a wide range of locations and ways to explore beliefs, knowledge, and experiences of contraceptive use (Jane et al., 2019; Sturley, 2000; Wallace et al., 2018a). Studies have also shown the benefit of using body mapping as an educational tool with health providers, through learning initiatives about HIV with nursing students (Maina, Sutankayo, Chorney, & Caine, 2014).

1.3. Study rationale

In this study, we used an operational and participatory approach to explore the beliefs, understanding and service provision experiences of health providers working in family planning services in Timor-Leste, with a focus on male methods of family planning. We acknowledge the complex history and rich cultural diversity that exists in Timor-Leste and within the health system, and the need for contextually appropriate and respectful methods of enquiry. In this paper we aim to demonstrate the effectiveness of using body mapping in conjunction with open-ended questions, to gain deeper insights and understanding about SRH service provision in Timor-Leste.

2. Methods

2.1. Study design

We conducted semi-structured in-depth interviews (IDIs) with health providers across seven municipalities in Timor-Leste (Ainaro, Baucau, Bobonaro, Dili, Lautem, Manufahi and Oecusse). Municipalities were selected based on municipality-level SRH data, operational logistics and

recommendations from key stakeholders, including the Timor-Leste Ministry of Health, the National Health Institute of Timor-Leste, and local and international civil society groups and NGOs working in health, education, and gender. We recruited participants purposively based on location, visiting both rural and urban locations within each municipality. We sent formal letters about the research to each municipality health director and facility level health managers, including information on research locations and dates, ethical approach, and selection criteria for participants. Health providers were invited to participate in the research through these connections. In this study, a health provider was defined as any client-facing health provider currently working at a government, private or faith-based health service site; for example, this could include midwives, doctors, nurses or counsellors. Any health provider involved in the delivery of SRH services and over 18 years of age was eligible to participate. All health providers approached to take part in the study consented to participate in the research.

2.2. Data collection

Data collection occurred between August and December 2019. The IDIs were designed and piloted in Tetun, one of the national languages of Timor-Leste, and were initially explained to participants in Tetun before being conducted in participants' preferred language. We encouraged participants to use the language they felt most comfortable using when expressing themselves verbally and on the body map activities due to the multilingual context and desire to be as inclusive as possible in our approach (Henderson et al., 2022). However, working for and within the Timor-Leste health system, all participants were assumed to have a working knowledge of Tetun.

The IDIs began with semi-structured open-ended questions about motivations to become a health provider, training and support received, and experiences of providing SRH services. The open-ended questions were followed by body mapping activities, which comprised of two components: 1) body mapping using a blank template of a full male and female body; and 2) body mapping using an internal template of the male sexual and reproductive organs (Appendix 1). The first body mapping activity template was designed by a research team member (MS). The second body map template was adapted from the World Health Organization (WHO) Global handbook for family planning services (World Health Organisation, 2018b, p. 435). For both body mapping templates, participants were asked to draw, write, or mark in three separate colours: 1) the sexual and reproductive organs of the body (blue coloured pen); 2) types of contraception (green coloured pen); and 3) possible side-effects of contraception use (red coloured pen). Participants verbally explained what they had designed or expressed on their body maps during or after they were complete. Questions and dialogue were prompted by the research team based on the unique and individual body maps produced by participants, and how participants interacted with the process. For example, we asked questions like "can you tell us more about what you have drawn here?" and "what does this writing in the red colour say?"

At the end of each IDI, participants were provided with national SRH information and resources for use at their health facility, including a Ministry of Health family planning wallchart and health promotion material; a copy of the national family planning policy; national referral posters for responding to violence; copies of male and female anatomy sheets from the WHO handbook on family planning; and if requested by the health provider, condom stock was transferred to the facility.

The IDIs lasted between 30 and 120 min in length, with a median interview time of 65 min. The ratio of time spent between the open-ended interview questions and body mapping activities varied substantially between participants. Completion of the body mapping activities took between 15 and 45 min, with a median activity time of 35 min. IDIs were conducted by three research team members (HH, AS and MS). The first interview was conducted by HH, AS and MS together, enabling each researcher to take on a supportive but slightly different role within the IDI process. For example, AS led the body mapping activity while MS refilled the drinking water jug. We sat in a circle to help reduce any power differentials and regularly checked in with the participant about their comfort and interest to continue the interview. The three researchers debriefed after the interview was complete to discuss what worked well within the IDI process and what could be improved. Dependent on time availability and logistical reasons, twenty-one interviews were conducted in pairs (HH and AS or HH and MS) and two by HH alone. As all participants were health providers working in the field of SRH and contraceptive services, a certain level of experience and familiarity in talking about these issues was assumed. Despite this, where possible, participants were asked in advance of the interview if they had a preference to speak with either a male or female researcher, or a Timorese or malae (foreigner) researcher. No participants expressed a preference in regard to who they spoke with.

Two IDIs were observed by members of the National Health Institute of Timor-Leste ethics committee, as part of their research ethics monitoring. No other individuals were present at any of the IDIs. Most IDIs were conducted in an empty service or administration room at the health provider's health facility. On request by the participant, one IDI was conducted in a quiet room of a nearby restaurant. Participants were interviewed only once.

2.3. Data management and analysis

Interviews were audio-recorded and transcribed verbatim in the language they were conducted in (Tetun, English, Indonesian, Portuguese and Spanish) using word processer software by the data entry officer at Marie Stopes Timor-Leste (MSTL), a non-government SRH specialist organisation working in partnership with the Timor-Leste Ministry of Health. The transcripts were then translated into English by a professional translator employed by MSTL (fluent in Tetun, English, Indonesian, Kairui, Portuguese, Spanish and Waima'a). The translator cross-checked the transcriptions by listening to the audio-recordings during the translation process. The original and translated transcripts were read and reviewed by the wider field research team. The field research team then gathered to review and analyse both the body maps and interview transcripts as a team. Team members who led the body mapping activities also shared their reflexive notes from the experience. Body maps and transcription data were uploaded into the computer program NVivo (QSR International Pty Ltd., 2018) for storage and data management.

Data were analysed using reflexive thematic analysis (Braun & Clarke, 2006; Braun, Clarke, Hayfield, & Terry, 2019). Initial codes were collaboratively generated from the IDI transcripts and body map images by the field research team (AS, HH, HX, MS, SM). Practically, this involved laying all the body maps out in a room and looking at them individually, in conjunction with the interview transcripts, to create and allocate codes (for example, "perceived side-effects of contraceptive use"). We completed the first round of coding using hand-written post it notes. HH transcribed these hand-written codes to the data files uploaded in NVivo and conducted two more rounds of data coding as an individual, within NVivo. Codes were then reviewed, discussed, and examined again by the complete field research team. We categorised the codes as a team, to identify and define research themes across our data set. We also drew upon elements of narrative analysis to understand the body maps as whole and as individual pieces of data (Greenhalgh, 2016). This involved analysing what was expressed by individual participants through their body map images, how it was expressed and how it connected to their responses during the initial interview phase. This process enabled us to better understand how individual participants made sense of SRH and contraceptive services.

In this paper, we focus on research methods, with data saturation and research findings to be discussed in future publications.

2.4. Research team reflexivity

This research is part of a larger study, designed and implemented by a

multi-lingual field research team including two female (AS, SM) and two male (MS, HX) Timorese researchers from four municipalities in Timor-Leste (Ainaro, Baucau, Bobonaro and Manufahi), who collectively speak 16 different languages. The fifth team member (HH) is a white Australian woman who has lived and worked in Timor-Leste since 2012. She is proficient in spoken and written Tetun, which is one of the two co-official languages of Timor-Leste and the most widely spoken language across Timor-Leste (General Directorate of Statistics Timor-Leste, 2015). At the time of study design and data collection, all field research team members worked for MSTL in program management, program support and education roles. We had extensive experience as a team working in Timor-Leste providing SRH programming and research work, including community outreach, health promotion and service delivery. We drew on the principles of reflexivity and solidarity at all stages of our research, both as individuals and as a team. This involved regular team discussions about what worked well and what could be improved (Barry, Britten, Barber, Bradley, & Stevenson, 1999). For example, during these group sessions we discussed the privilege and challenges of listening to participants with different values and beliefs about SRH to ours, and strategies in which to remain open and non-judgemental to what was being discussed. We also used reflexive practice as individuals (for example, writing reflexive field notes) to record and explore our own beliefs, positionality, knowledge, and assumptions. We worked closely with key stakeholders, including civil society, the Ministry of Health, and health providers, in the design of our research questions, methodology, and other practical elements of the research such as specific roles, technical and logistical aspects, and time frames for our activities. Technical support and expert guidance were provided by three experienced and multi-disciplinary health and research supervisors, one based in Dili, Timor-Leste (RA) and two based in Melbourne, Australia (MAB, CV).

2.5. Ethical considerations

Ethics approvals were provided by the National Health Institute of Timor-Leste (reference: number: 1168MS-INS/DE/DEP/V112019), the University of Melbourne in Australia (reference number: 1954731.1), and MSI Reproductive Choices in London, UK (reference number: 020-19). Written consent was provided by all participants in Tetun. A plain language information statement was provided to all participants in Tetun. Importantly, we took time before the research began to discuss the research with each participant to ensure that they were aware and understood the research aims, objectives, who the research team was, and what would be asked of them. We emphasised that their responses were confidential, de-identified and in no way a clinical competency assessment or linked to their current or future roles as health providers. This was to help participants feel comfortable and safe to speak openly about their understanding, beliefs and practices as a health provider. All participants agreed that we could keep or photograph their completed body map designs. Members of the National Health Institute of Timor-Leste ethics board conducted quality monitoring of the field research in two separate trips, observing two IDIs in different municipalities (Bobonaro and Manufahi). Participants were informed about the ethics board quality monitoring plans in advance of the IDI and were given the opportunity to speak to us privately at another time (without the ethics board members present) or to withdraw from the research. Both participants consented to having the national health ethics board members present during the time of the IDI.

This paper is reported according to the consolidated criteria for reporting qualitative research (Tong, Sainsbury, & Craig, 2007) (Appendix 2).

3. Results and discussion

Twenty-four participants were engaged in the IDIs across seven study locations (Table 1). Fifteen midwives, four doctors, three nurses and two family planning counsellors participated (16 women, 8 men; aged 25–56 years). Of these, twenty participants completed the body mapping activities. Participants had diverse educational backgrounds, having completed pre-service clinical training within Timor-Leste and overseas (Malaysia, Indonesia, Cuba, Australia, and Pacific Island nations). Participants had from less than one year to more than 16 years of professional experience as a health provider and had entered the Timor-Leste health workforce at different stages of national health system development. For example, some had entered the health workforce prior to independence, some soon after independence, and some more recently.

At the time of interviews, participants were working in a range of health facilities including hospitals (3), community health centres (6), health posts (4), mobile outreach at public and private health facilities (9) and counselling sites (2).

All participants had a working knowledge of Tetun, with most IDIs conducted in this language. Two participants spoke in a mix of Tetun and Indonesian, and one in a mix of Tetun and English. Reflective of the linguistically diverse nation and working environment, most participants also incorporated words or phrases, especially clinical terminology, from a variety of languages including Indonesian, Portuguese, Spanish, and English.

In the following sections, we identify and reflect on three key findings about why body mapping proved to be a valuable and beneficial approach for our research with healthcare providers: 1) methodological flexibility; 2) improved rigor and depth of data collection; and 3) acceptability and ability to provoke thought with participants. We also identify and reflect on the limitations and challenges of using body mapping to explore SRH with health providers.

Table 1
Sociodemographic data of participants.

	Total
Number of participants	24
Gender	
Female	16
Male	8
Median age (age range)	36.5 (25–56)
Location	
Rural	9
Urban	11
Mobile (visiting rural and urban sites)	4
Municipality	
Ainaro	3
Baucau	3
Bobonaro	3
Dili	7
Lautem	2
Manufahi	3
Oecusse	3
Profession	
Midwife	15
Nurse	3
Doctor	4
Counsellor	2
Professional experience as a health provider (years)	
<1	1
1–5	5
6–10	8
11–15	3
16 +	7
Marital status	
Married	20
Single	1
Divorced	1
Living with partner	2
Number of living children – median (range)	2 (0 – 6)
Self-identified kinship system	
Matrilineal	7
Patrilineal	16
Other	1

3.1. Methodological flexibility

Each participant was given the same introduction to the body mapping activities. However, beyond the initial instruction and question prompts, participants had the opportunity to decide how they wanted to engage with the task. As a result, each participant engaged with the body mapping process differently, and for a different amount of time. Participants used different languages, design styles (for example, writing, drawing detailed images or making simple marks) and went into varying levels of detail in response to the prompt questions.

Some participants would narrate what they were doing while mapping on the templates, while most were quiet, focused and more introspective, choosing to speak about their body map designs only at the end of the activity. This flexibility enabled participants to think and communicate in languages and approaches that best suited them. As researchers, we were guided by how participants wanted to interact with the body mapping process. This ability to adapt and be led by the individual preferences of participants helped ensure participants had the power and opportunity to make active decisions about how they wanted to be involved in the research process.

The flexibility of body mapping methods was especially valuable given the diverse socio-cultural backgrounds and professional experiences of the participants involved in our study. Participants had completed their clinical training in highly diverse ways and locations and had experience entering the workforce during various stages of post-conflict health system development. Acknowledging this diversity in education, training and practice is important as health and education systems vary significantly across the world, and over time, influencing the knowledge, experience, values, language, and practice of a health provider (World Health Organisation, 2013). Through body mapping activities, we were able to effectively explore the highly diverse knowledge, experiences and approaches of participants towards SRH in a way that acknowledges and respects their training, expertise and opinions.

We provide examples of completed body map images in Figs. 1 and 2 below. The examples selected demonstrate some of the diversity in body maps created and the rich understandings they help produce.

3.2. Improved rigor and depth of data collection

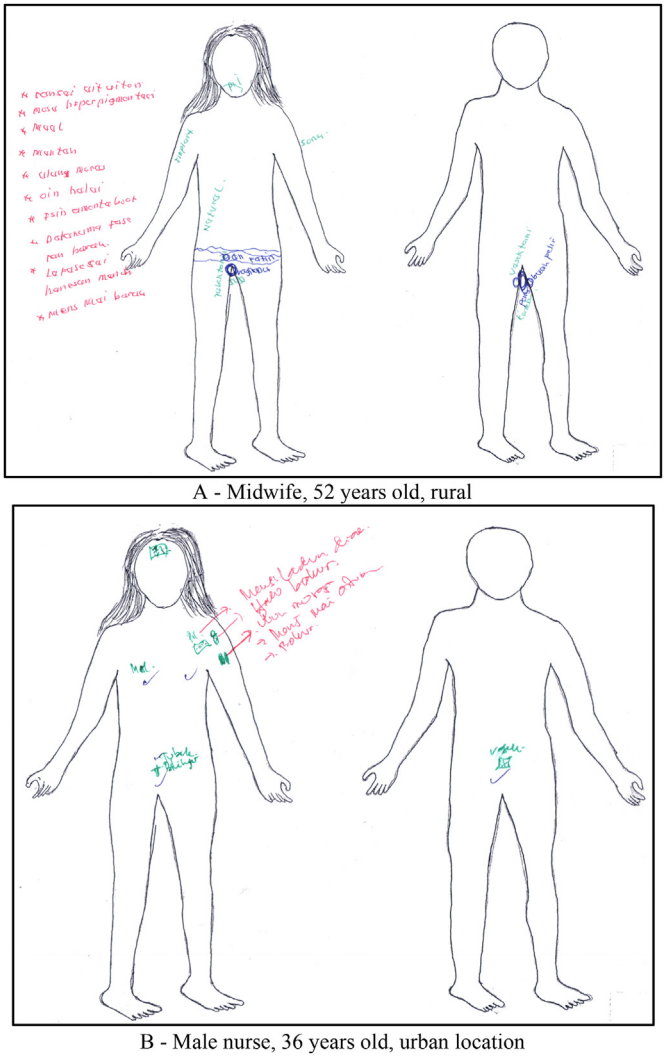
The opportunities and challenges of using multiple methods in qualitative research are well documented, including the ability to triangulate data and understand how participants engage with different media (Smit et al., 2021). The value of using more than one type of data collection method in our study provided a unique opportunity to understand how participants engaged with the research content, and also how the methods used influenced their responses. Our findings point to important differences between open-ended questions and body mapping processes, and how by combining these methods we were able to add value and depth to our research work.

The open-ended questions that started the IDI process provided valuable and important insights for our study. These insights were able to be expanded upon during the body mapping activities. When moving from the open-ended questions to the body mapping activities, most providers were able to engage in the research content with more depth and clarity. For example, during the open-ended questions at the start of the IDI, most participants initially reported that they had good knowledge about family planning services and provided comprehensive counselling to all their patients. Responses were, though, often abstract and general. For example:

> *"I provide information about all the methods, the different types. The patient can make a decision based on the information" (Midwife, 36 years old, urban location)*

However, during the body mapping process, many participants started engaging with the process in a more practical and reflective way. For example:

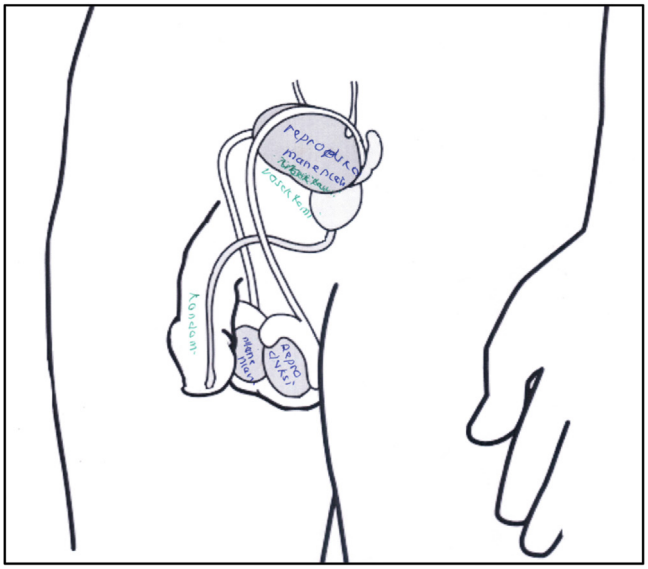
> *"For men … I'm not so experienced in this one actually. I mentioned vasectomy before but in reality I don't know so much about it yet. I don't know if it has side-effects or not" (male health counsellor, 35 years old, urban location)*



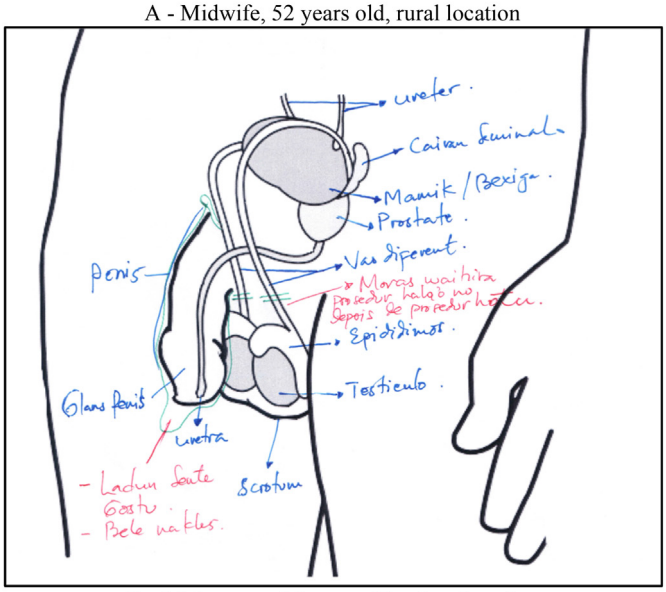
A - Midwife, 52 years old, rural

B - Male nurse, 36 years old, urban location

Fig. 1. Examples of full body map images.
Two body mapping images (A - B) describing provider perceptions and understanding of female and male sexual and reproductive organs in blue; types and function of contraceptive methods in green; and perceived side-effects of contraceptive methods in red.
Body map A: Substantial detail is provided about female sexual and reproductive organs, methods of family planning and possible side-effects. The identification and description of male sexual and reproductive organs, however, are minimal, with the participant sharing: *'In midwifery we study the woman's body not the man's … I don't know about the man's body. I'm a midwife'*. The condom and vasectomy are identified as contraceptive methods for men, with no known side-effects.
Body map B: The condom and vasectomy are identified as contraceptive methods for men, with no known side-effects. Tubal ligation, IUD, oral contraceptive pills, injectables, implants and natural family planning methods (lactational amenorrhea, abstinence and the Billings method) are identified as female methods of family planning. Drawn on the head of the female body map, fertility awareness methods are identified and described as something only a woman needs to learn, understand, and manage. Side-effects of female methods of contraception are listed as being menstrual cycle and weight changes, headaches, and increased risk of illness.(For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)



A - Midwife, 52 years old, rural location



B - Male nurse, 26 years old, urban location

Fig. 2. Examples of internal body map images
Two body mapping images (A – B) describing provider perceptions and understanding of the male sexual and reproductive organs in blue; types and function of male contraception in green; and perceived side-effects of male contraceptive methods in red.
Body map A: The bladder is identified and described as an important reproductive organ for the development of semen. Vasectomy and male condoms are identified as contraceptive methods for men. Vasectomy was identified and discussed as being an incision in the urethra, with possible negative impacts to the urinary system. No side-effects of male contraception are identified or described.
Body map B: Detailed physiological function of male sexual and reproductive organs is provided. Vasectomy, male condoms and natural methods are identified and verbally discussed. Several contraceptive side-effects are described, including risk of infection after vasectomy and that the male condom reduces [sexual] pleasure. Pleasure was only mentioned by two health providers participating in the IDIs, both in the context that pleasure is reduced when using condoms (less pleasure as a side-effect). A recent systematic review and meta-analysis shows that including pleasure in SRH programming has a positive impact and effect (Zaneva, Philpott, Singh, Larsson, & Gonsalves, 2022).(For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Some more examples of participant self-reflection or ability to build on their previous responses during body mapping activities are given in Table 2.

The ability to reveal more nuance and detail during the body mapping process may be due to the timing and approach of the activity, which provides more time and scope to think and engage with the research content compared to a standard question-response format of an in-depth interview. That is, the process provides participants with time and space to reflect on their experiences and knowledge. In comparison, more standard approaches to qualitative IDIs involve questioning that often demands an immediate response with less time for reflection. The process of visually documenting beliefs, understanding and knowledge on the body mapping paper may have also enabled participants to develop their answers more thoughtfully than in verbal responses alone.

The ability of visual tools to reduce power differentials and increase

Table 2
Examples of participant self-reflection and response differences between semi-structured open-ended questions and body mapping activities.

Initial responses by some participants during IDI open-ended questions	Responses by the same participants during body mapping activities
Sharing that they provide counselling for all methods of family planning. For example: "I share all the information, about all the methods, then the patient decides" (Midwife, 31 years old, rural location)	• Sharing that they never speak about certain methods of family planning (e.g., vasectomy, tubal ligation, condoms) due to the belief that no client will want them. For example: "I have never talked about it [tubal ligation] with a patient. I don't think women want this" (Midwife, 31 years old, rural location)
Sharing that they are trained and confident in providing all methods of family planning. For example: "Here I do everything for family planning, I provide all the methods" (Midwife, 31 years old, rural location)	• Sharing that they have not received training in some methods of family planning (e.g., vasectomy, intrauterine devices (IUDs), implants). • Sharing that they have received theoretical training in some methods of family planning (e.g., IUDs) but had not yet had any real-life practice or experience. For example: "I can do counselling for everything, I just haven't had training on implant or IUD yet" (Midwife, 31 years old, rural location)
Sharing that both men and women play a role in correct and consistent use of natural family planning methods.	• The identification and description of natural family planning methods (e.g. abstinence) on only the woman's body map image, and not the man's. For example, as described in Body Map B, in Fig. 1 below.
Sharing that they provide counselling and services for male methods of family planning. For example: "I provide all the information to anybody that comes, man or woman" *(Midwife, 39 years old, rural location)*	• Sharing that they rarely or never have male clients and therefore do not speak about male methods of family planning. • While some participants shared they would talk about male methods of family planning with female clients, most would not. It was explained that women usually attend health services alone, with the provider believing the woman would either be uninterested in male methods or not have the ability or safety to share that information with their male partners. For example: "No, we don't have male patients here. Only women come for FP [family planning]" (Midwife, 39 years old, rural location) "The thing is, we want to talk about condoms, we want women to take condoms, but if they take this home and don't have good understanding with their husband, it will create problems. 'You went and got this to do what?' It's very difficult for women" (Midwife, 34 years old, rural location)

participant self-confidence within an interview setting has also been well documented (Glegg, 2019). In our study, the process of body mapping also shifted the physical and social dynamics of the research environment, by providing something (the body map) for the participant to look at and refer to while speaking. This reduced the amount of direct eye contact between the researcher and participant and may have helped the participant feel more confident and comfortable when expressing themselves. For example, participants would often hold their completed body map image and point to various parts while describing what they had written or drawn. This provided something structured for both the participant and the researchers to look at while engaging with each other, rather than maintaining direct eye contact.

Completing the body mapping activities last also provided an opportunity to check and clarify what participants had discussed during their open-ended questions. For example, one participant had responded during the open-ended questions that all women could access family planning services, regardless of age or civil status. This response was revisited during the body mapping activities and elicited a more nuanced response from the participant: although age and civil status did not influence a woman's ability to access family planning, access was influenced by whether the woman had given birth. This participant explained their belief that access to any hormonal methods of contraception and copper intrauterine devices (IUDs) should be restricted only to women who have had a child already. Exploring this belief in more detail using the body map as a prompt, the participant explained their reasoning being based on the (mis)understanding that hormonal contraception can impact a woman's fertility to have children in the future and that use of an IUD may damage the concept of a woman being defined as a 'virgin'.[1] Again, going deeper with the completed body map as a verbal prompt, this provider described the responsibility they felt as a health provider, to protect a woman's fertility and 'virginity' by only providing services to women who have already had children. For example:

> *"In my opinion they* [women without children] *can't use this* [hormonal contraception], *no. We don't know the impact on her body, what it will do to her. What if she can't have children in the future? The risk is too big, too big... I need to protect her future",* further: *"It* [the IUD] *should only be used after the woman has been with a man. With this inside her, she has been changed, her body is damaged. He will think she has been with other men and question her honesty" (Midwife, 29 years old, rural location).*

This same health provider expressed that a woman must be married to have a child, resulting in them only providing services to married women (despite their belief that civil status did not influence their service provision practice). This example demonstrates the nuanced exploration required to understand how different client demographics (e.g. parity, age or marital status) can influence health provider beliefs and practices. As described by Solo and Festin (2019), being able to identify and measure causes of family planning provider bias (the restriction of services that are not based in medical reasoning, and are often influenced by social norms) is the first step in being able to adequately respond to it. Further, in this specific example, body mapping provided an open and non-judgemental way to identify and explore the concept of virginity, which as a social construct, has a highly varied understanding and definition dependent on context (World Health Organisation, 2018a). Health providers may be exposed to the concept of virginity and possible health provider roles (such as virginity testing) based on where they completed their medical training. In this case, the participating health provider had completed midwifery training in Indonesia, a country in which virginity testing occurs (World Health Organisation, 2018a).

Qualitative methods have a well-established place in health research, with an increasing and ever-expanding repertoire of versatile and arts-based approaches being used (Smit et al., 2021). This is driven largely by the strong argument that qualitative research should form part of evidence-based practice, due its ability to help understand complex health problems (Smit et al., 2021). Family planning services are complex, and a client's need will vary dependent on individual preference, fertility intention and medical eligibility. As demonstrated in the above examples, the body mapping process may have enabled participants to express themselves with more clarity and nuance, illustrating the complexity of provider decision making. However, it is important to highlight that looking at the body maps alone does not tell the whole story and can result in misinterpretation. In our study, the amount of detail drawn on the body maps did not necessarily relate with the extent of knowledge or understanding a participant had. For example, a seemingly small mark on a body map could have significant meaning and depth in its representation. It was therefore essential to understand the body map images in conjunction with the verbal explanation from the participant, understanding that body mapping is a process and generates more data than just the final image created.

3.3. Acceptability and ability to provoke thought with participants

Most health providers complete countless exams and competency assessments during their training and practice as health providers. As a result, direct questioning (such as in a research interview) may feel like a competency assessment or exam to some health professionals. Body mapping provides a different way of thinking and sharing perspectives. It can be a gentle, non-threatening and non-judgemental method that within our research, did not seem to pose any perceived impact or risk to their role as a health provider. The confidentiality and privacy of an individual's involvement in the research was discussed with participants during the informed consent process, and repeatedly throughout the interview and body mapping process. The body mapping activity was well accepted by those able to complete the process. Many participants reflected that they had not been involved in anything like it before, and that they previously had not had the opportunity or scope to learn about male family planning methods. For example:

> *"I have been involved in research before, with [*national institution*]. They wanted data from 2016 to 2019 and asked many questions. I didn't know what to say. It was like an interrogation and took all my time. Today was easier, better. I like this thing we did, this what do you call it, body mapping" (Midwife, 52 years old, rural location)*

These findings complement other studies that demonstrate how, when implemented effectively, body mapping can be a safe and respectful experience for people who feel uncomfortable or threatened by more traditional research participation (Smit et al., 2021).

Body mapping also proved to be a highly engaging and thought-provoking process with participants, with many asking questions throughout the activity, including: "What role do the testes play?" "Are there side-effects of using vasectomy?" "Where can vasectomy be provided?" "Who can provide a vasectomy?" "Are there guidelines for this?" "What are national policies?"

To the best of our ability, we engaged with all questions at the end of the research activity and provided resources and referral to further information and clarification as was possible.

3.4. Limitations and challenges of body mapping about SRH with health providers

We purposively conducted the body mapping activities at the end of our semi-structured interview to help ensure initial rapport and understanding was built with participants, and to avoid the activity being perceived as an exam or competency test. The implication of doing this however meant that four out of 24 participants were unable to complete the activity due to limited time and their need to manage competing service provision priorities.

[1] The authors acknowledge the definition of virginity is a social construct, and one that is deeply flawed and medically disputed.

Participants were provided with a pre-designed male and female body template, to make the most of a health provider's limited time. We acknowledge this binary depiction of what is female and male does not encapsulate the true diversity of sex or gender and may have limited participant responses. We purposefully included questions about gender and sexual diversity, and sexual orientation in our body mapping enquiries to acknowledge and try to mitigate that limitation. In providing a pre-designed template, we also acknowledge that participants may have felt restricted to draw within the template outlines, rather than include any out of body influences on SRH, contraception or contraceptive side-effects.

An identified limitation of body mapping is the risk of over-interpretation of the drawings (Zaman et al., 1998). This was mitigated by the participant leading the verbal explanation of their own body map image and having sufficient time for the research team to ask follow-up questions.

We acknowledge that by recruiting participants based on their health professions, some participants may have felt the need to approach body mapping with a purely biomedical approach, without consideration of Indigenous beliefs or understandings they might have. This may have contributed to the way many participants focused on the prevention of disease and unplanned pregnancy, as if sexual relations are a biomedical, asexual process. We tried to mitigate this by proactively encouraging participants to draw on all their knowledge and experiences and reiterating that the process was not a test with right or wrong answers, but that all contributions were valued and respected. Clearly communicating the purpose and process of body mapping with health providers is essential in ensuring it is an effective approach and not misused.

Due to impacts from the COVID-19 pandemic following the data collection period - including the inability to travel, meet face to face and the increased workload of health providers - the field research team were unable to travel back to all the IDI participants for planned member checking processes. Only three participants based in Dili were approached and available to engage with and provide feedback on the research transcripts and findings. This was mitigated by inviting other health providers, who were not participants in the research, to provide feedback during stakeholder engagement activities.

We also acknowledge possible power imbalances between researchers and participants, through our associations with a health NGO and an Australian university. This was mitigated through a careful informed consent process before and throughout the research experience.

3.5. Research application

Implemented as operational research, our findings were used to directly inform programmatic decision-making at MSTL. Hearing participants' questions and requests for information during the body mapping activities was especially useful and helped guide organisational-level health provider training and support initiatives. The IDIs also proved a quick way to identify practical support needs at the health facility level - such as lack of stock or equipment – and respond as possible and appropriate. Based on the overall positive and effective use of body mapping activities within our research, we also adapted body mapping activities for use within programming, as a low-cost, fun, and interactive tool for SRH education sessions. Importantly, insights gained from the IDIs were also used to inform health promotion activities and program design more broadly, including national-level health sector strengthening initiatives led in partnership with the Ministry of Health. A plain language report was produced in English and Tetun and shared with key stakeholders. Findings were also shared verbally in the national languages of participants, through municipality based MSTL team members.

4. Conclusions

Our research demonstrates that when used in conjunction with in-depth interviews, body mapping is an effective and respectful method to explore health provider beliefs, understanding and experiences about SRHR and family planning service provision. Body mapping provided a practical and reflective way to engage with health providers, adding depth and greater meaning to the interview process. The findings generated from our study can be used to inform policy and programmatic decision-making in Timor-Leste, including health provider training and SRH service delivery initiatives. As a research tool, body mapping helped collect invaluable data that specifically addressed our research questions, in an inclusive and acceptable way.

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Author contributions

We use the CREdiT (Contributor Roles Taxonomy) for defining author contributions (https://casrai.org/credit/). **Helen Henderson:** Conceptualisation, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Review and Editing, Writing – Original Draft. **Alexandrina Marques da Silva**: Conceptualisation, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Review and Editing. **Mariano da Silva**: Conceptualisation, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Review and Editing. **Helio Afranio Soares Xavier**: Conceptualisation, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Review and Editing. **Silvina Amaral Mendonca**: Conceptualisation, Methodology, Validation, Formal analysis, Investigation, Data Curation, Writing – Review and Editing. **Rui Maria de Araújo**: Conceptualisation, Methodology, Writing – Review and Editing, Supervision. **Cathy Vaughan**: Conceptualisation, Methodology, Writing – Review and Editing, Supervision. **Meghan A. Bohren**: Conceptualisation, Methodology, Writing – Review and Editing, Supervision.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: The five field research team members (Helen Henderson, Alexandrina Marques da Silva, Mariano da Silva, Helio Afranio Soares Xavier and Silvina Amaral Mendonca) worked for Marie Stopes Timor-Leste (MSTL) at the time of data collection. MSTL received financial support from the Australian Department of Foreign Affairs and Trade to conduct this research. Helen Henderson is supported by a Human Rights Scholarship, awarded through The University of Melbourne. Meghan A. Bohren's time is supported by an Australian Research Council Discovery Early Career Researcher Award (DE200100264) and a Dame Kate Campbell Fellowship.

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Appendix A. Supplementary data

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