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'She has become Brave:' the role of menstrual health education in building girls' agency

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ABSTRACT

This paper investigates the causal pathway of life skills Binti Shupavu program in Tanzania to show how and why the program works to support the development of adolescent girls' agency. We collected data from 52 stakeholders via 15 focus group discussions and interviews and utilized a qualitative process tracing methodology to construct a causal pathway from the Binti Shupavu Health and Wellness curriculum, towards girls' agentic capacity. The findings reveal that successfully navigating the 'shock' and stress of menstruation at school, and the practice of self-care, leads to improved self-confidence (*kujitambua)*, 'bravery' (self-advocacy) and decision-making around bodily autonomy. This process is facilitated by destigmatizing menstruation and catalysing social norms change within communities through parental engagement sessions and girl-centred pedagogy. We argue that the application of menstrual health knowledge provides important 'cognitive bridging' opportunities for the development and transfer of key soft skill competencies to girls' lives.

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Agency; menstrual health; SRH; life skills; social emotional learning (SEL); adolescent girls

Introduction: What makes girls brave?

> You know you can be a girl but not self-determined as a girl, but Binti Shupavu made us have determination as girls. Also if you are stressed you should have someone close to express yourself who might help you not to be depressed. We [have] learned how to be more brave. (Binti Shupavu alumna).

Life skills programs have gained attention as a powerful and low-cost intervention for improving adolescent girls' success across a variety of education and health-related outcomes (Kwauk et al., 2018; Temin & Heck, 2020). Typically structured as weekly after school 'girls clubs' operating at school, life skills programs are characterized by a common set of two-part content: sexual and reproductive health (SRH) information and 'soft skills' or 'social emotional learning' (SEL) curriculum focused on helping girls' develop personal competencies like assertiveness, resilience, problem-solving, decision-making, etc (Nasheeda et al., 2019). Increasingly researchers have found that the positive impact of life skills programs on girls' achievement in school and improved health is a result of such programs' success at improving girls' soft skill competencies (Catalano et al., 2019; Temin & Heck, 2020; Yeager, 2017) and specifically, girls' agency (Kwauk et al., 2018).

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Most simply defined as the ability to affect change in your own life (A. A. Sidle, 2019), agency is both a key ingredient in women's 'empowerment' (Kabeer, 1999) and a 'socioculturally mediated' capacity constrained by the environment (Ahearn, 2010, p. 28). We agree with psychologist Albert Bandura who suggests that while human agency is constrained by environment and it can also change the environment through human action (Bandura, 2006), making it an important outcome for promoting transformative change for adolescents.

Yet, despite the promise of life skills programs for improving adolescent agency, existing policy research has yet to demonstrate in detail how programs work to achieve their outcomes and the relative contributions of specific intervention components (Marcus et al., 2017). Experimental evaluations and systematic reviews tend to treat life skills programs as a uniform, indivisible package of curricular content – with little attention paid to delivery mechanism, specific curriculum content, pedagogical approach or why the particular combination of sexual and reproductive health content is valuable for soft skills learning. Accordingly, research on life skills interventions continue to focus almost exclusively on observable health and education outcomes and rarely on the essential processes needed to achieve them – leaving huge gaps in the knowledge base needed for replication and scale.

Our study attempts to provide a detailed and nuanced look at program process and show how distinct curriculum content, program delivery mechanisms, and complimentary program components work in relationship with each other to build arguably one of the most important outcomes for girls: agency. Our research suggests there exists a direct causal path between knowledge and preparedness on menstruation and puberty, the practice of self-care, and a host of soft skill related outcomes such as 'bravery,' 'self-awareness' and problem solving agency. Although the importance of menstruation education is generally accepted as instrumental for girls' health, the direct link between girls' knowledge about the physiological processes of their bodies and related self-care to their soft skill outcomes is under-examined in education research.

This paper shares baseline findings from a mixed-methods evaluation of Binti Shupavu ('Courageous Daughters') girls' life skills program in Tanzania and aims to contribute empirical evidence that links the education and public health fields. First, our study adds to the growing body of literature supporting the causal link between comprehensive menstruation education taught in gender-responsive educational settings (also known as 'software' menstrual health interventions) and psychosocial outcomes – a gap previously identified by Hennegan et al. (2016). Second, we contribute a detailed look of how the causal process of a life skills program unfolds, and specifically how it contributes to positive gender norms change, and the destigmatization of menstruation within girls' households ultimately building their agentic capacity.

Background: Insights into menstruation in the Tanzanian context

> Binti Shupavu can build up self-confidence and can make you become strong. . . . sometimes when you are in your period cramps you feel less secure, and scared that people might mock you for your period cramp days. (Binti Shupavu alumna).

Puberty and menarche thrusts girls into a complex social, cultural, and material landscape in which they must navigate newfound challenges and responsibilities often with limited knowledge and support. Many girls in Tanzania are unprepared for and ill-equipped to navigate puberty and menstruation due to lack of access to vital health information (Coast et al., 2019; Korir et al., 2018; Mason et al., 2013). Studies show that less than one third of girls are informed about menstruation during menarche (Metta et al., 2021). The lack of readily available health information creates significant barriers for girls in accessing vital material resources (Korir et al., 2018), adequately caring for their bodies (Jewitt & Ryley, 2014), fully participating in school (Benshaul-Tolonen et al., 2020; Jewitt & Ryley, 2014; Korir et al., 2018; Mason et al., 2013), and developing a healthy sense of self. Accordingly, menstrual health is acknowledged as vital to girls empowerment (Sommer et al., 2021.;

World Bank 2022). In this paper, we utilize the definition of menstrual health developed by Hennegan et al. to mean 'a state of complete physical mental and social well-being in relation to the menstrual cycle' (2021, pp 32) to acknowledge and recognize the psycho-social effects of menstruation in girls' lives.

Traditional menstrual knowledge systems and knowledge gaps in East Africa

> For us in our tribe it is difficult to sit with a girl child and question her how she is doing, because she has already reached a certain stage [puberty]. (Parent of Binti Shupavu alumna).

Menstruation is a taboo topic in Tanzania, particularly between adults and adolescent girls (Jewitt & Ryley, 2014; McMahon et al., 2011; Metta et al., 2021; Sommer, 2009). Pan-African NGO Foundation for African Women Educationalists (FAWE) describes a 'culture of silence' surrounding menstruation in East Africa (cited in Kirk & Sommer, 2006), but such a culture of silence has not always been the norm.

Customarily, grandparents circumvented the social norms that inhibit communication about sexual and reproductive health (SRH) between adults and adolescents (McMahon et al., 2011; Sommer, 2009; Wamoyi et al., 2010). Grandmothers and female elders historically 'played an instrumental role in explaining menstruation and discussing menstrual management and reproductive health with young girls' (McMahon et al., 2011, p. 6). However, urban migration, high labour demands, and early death, particularly from the AIDS epidemic have disrupted these traditional knowledge systems (Jewitt & Ryley, 2014; Korir et al., 2018; McMahon et al., 2011; Sommer, 2009). In a 2021 study on adolescent experiences of menstruation among 506 secondary schoolgirls in Northern Tanzania, only 2.4% of respondents reported receiving information and support during puberty from 'other relatives' apart from their parents and sisters (Metta et al., 2021, p. 1136).

Instead, parents and other informal sources of information commonly pass on menstrual myths, taboos, and restrictions rather than accurate health information that helps girls understand and navigate their periods (Coast et al., 2019; Korir et al., 2018; Metta et al., 2021; Wamoyi et al., 2010). Girls become reluctant to confide in their disciplinarians and describe fear of abuse or retribution, particularly given the misconception that menstruation is related to 'bad behavior' and/or sexual activity (Sommer, 2009; Wamoyi et al., 2010). Cultural taboos, lack of accurate knowledge of menstruation, and disrupted knowledge transfer systems create a negative feedback loop of misinformation: inadequate information about sex, puberty and menstruation perpetuates taboos, myths, restrictive social norms and practices (Benshaul-Tolonen et al., 2020; Dhingra et al., 2007; Mason et al., 2013) *and* those very taboos and social norms inhibit vital transfers of knowledge and support (Sommer, 2009; Wamoyi et al., 2010). Figure 1 synthesizes a framework for understanding how social norms and taboos, disruption to customary knowledge systems and general lack of knowledge contribute to girls' distressing experiences of menstruation in Tanzania.

Girls' experiences of menstruation in schools

In school, the stress and 'shock' of the first period can become a traumatic ordeal. Inadequate access to clean water, private bathrooms, and sanitary facilities collides with these deeply-held stigmas and social norms to create a hostile environment for menstruating girls. Girls often lack adequate access to methods of blood capture and/or use makeshift pads, making girls prone to leaking onto their school uniforms which can be emotionally isolating and socially stigmatizing (Benshaul-Tolonen et al., 2020). Understandably, fear of leaking at school and negative social consequences are major sources of mental stress for adolescent girls (ibid).

In a study on menstrual knowledge and stigma among secondary school students in Northern Tanzania, Benshaul-Tolonen et al. (2020) found that although only 13% of participants had directly experienced menstrual teasing, more than 80% feared being teased (p. 6). Preoccupation with

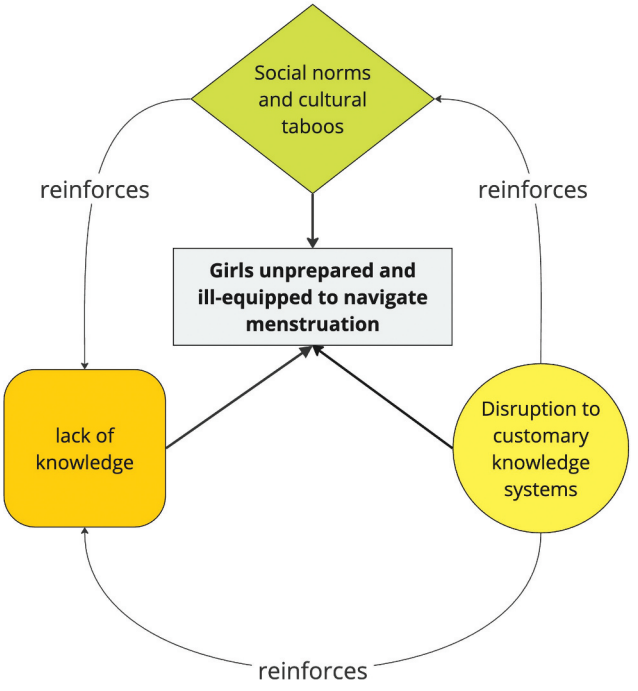

Figure 1. Framework for Understanding Menstruation Trauma in Tanzania.

leaking can 'disrupt girls' concentration and participation in class,' (ibid.) particularly in schools in which students must stand to answer questions (Jewitt & Ryley, 2014; Korir et al., 2018).

Girls' experiences of menstruation in school mirror the broader societal experience which marks menstruation as 'dirty' or 'unhygienic' (Plesons et al., 2021), creates significant barriers for girls' participation in public life (Zivi, 2020, p. 42) and encourages girls to treat menstruation with secrecy (Sobudula & Naidoo, 2024). Although policy makers are beginning to acknowledge the importance destigmatizing menstruation to improved menstrual health goals, a recent review of 34 policy initiatives in East Africa showed that while policies may help raise awareness about menstrual stigma, they do little to deconstruct that stigma (Olson et al., 2022). Our study highlights how the Binti Shupavu life skills program is shifting harmful gendered norms associated with menstrual stigma at household and school level.

The Program: Binti shupavu ('courageous daughters')

In 2016, the Girls Livelihood and Mentorship Initiative (GLAMI) conducted a participatory needs assessment of the barriers to girls' education to support adolescent school-going girls in rural Northern Tanzania. The GLAMI study showed that lack of knowledge/access to information on menstruation and other changes that occur during puberty, relationships with boys, sexual encounters with older men, and unplanned pregnancy are key barriers to school completion among girls in this region (McCubben, June 2016). The Binti Shupavu program was developed in response to these challenges, with a particular focus on a 'Health and Wellness' module which addresses emotional and physical aspects of puberty menstrual health; sexual and reproductive health and rights; cultural traditions, and stigmas. Health and Wellness is complimented with one executive-skills module called 'Study Skills' and three soft skills modules titled: Strength and Resilience, Personal Leadership, Developing Your Potential.

The Binti Shupavu program is delivered weekly afterschool by Binti Shupavu mentors, who are young, university-educated Tanzanian women trained in psychosocial support, peer-mentoring techniques; and student-centred pedagogy. Curricular sessions are complemented with annual parental engagement meetings and targeted psychosocial counselling, and material support accessed through a referral system and staff social worker who administers an 'emergency fund.' Parent engagement sessions provide parents with accurate information and training on how to communicate with their children on topics related to puberty, menstruation, and girls' needs during puberty.

Binti shupavu study & rationale

Evidence from an outcome evaluation conducted in 2019–2020 showed that participants in GLAMI's life skills programming demonstrated substantial and statistically significant gains in agency as measured by the Adolescent Girls Agency Scale (A. Sidle & Oulo, 2023) alongside 16 other programs operating in East Africa with similar structure and curriculum content (A. A. Sidle et al., 2022). The rationale for the present four-year mixed methods impact evaluation of the Binti Shupavu Program is two-fold: first, to shed light on how and why GLAMI's programs showed such promising results vis a vis peer programs on girls' agency. Second, to contribute to established literature gaps on the impact of agency as a specific outcome of interest for adolescent girls' educational achievement (Kwauk & Braga, 2017; Temin & Heck, 2020).

This study employs a Cluster Randomized Control Trial design (clustered at the school level) to evaluate the Binti Shupavu Program's impact on girls' agency and its subsequent influence on secondary school retention and achievement.The qualitative component of the study aims to elucidate the causal path of program's effect on girls' agency uncovering how and why the program works to achieve (or fails to achieve) its outcomes utilizing a longitudinal design and process tracing method to draw causal inferences (Beach & Pederson, 2016). This paper shares retrospective qualitative findings from year one of the study.

Data & Methods

Data collection was conducted in July 2022 as part of baseline qualitative data collection for the Binti Shupavu Study. Our aim in analysing baseline data was to construct a hypothesized causal pathway of how the Binti Shupavu program operates to improve girls' agency based on interviews key program stakeholders. Subsequent rounds of data collection not included in this study will aim to confirm, disconfirm and/or refine findings from the baseline utilizing a doubly decisive tests and triangulation with quantitative data (Befani & Stedman-Bryce, 2017).

To construct a theoretical representation of *group* experience of the program, we collected focus group discussions (FGDs) data in order to capture the widest variety of perspectives on program experience, and build confidence in the patterns of experience identified by participants (Patton, 2022). FGDs were conducted with key stakeholders including program alumnae, teachers, parents and community members and were coupled with in depth interviews (IDI) with Binti Shupavu program staff who, as technical experts on the program would be able to provide detailed knowledge the program's components and implementation. We utilized a semi-structured interview guide for all interviews aimed at investigating participants' direct experience with, or perceptions of, the Binti Shupavu program process, and the environmental constraints of program participation.

To maximize diversity of experience in the study sample, we utilized purposive sampling to capture the perspectives of stakeholders in two different regions of the program's catchment areas (Arusha and Kilimanjaro) that serve different ethnic, linguistic and cultural demographic groups. Additionally, because the primary study focuses on education outcomes, we wanted to ensure that participant experience captured those with diverse post-graduate outcomes. Accordingly, alumnae were segmented into two groups: those who were already engaged in higher education or those

who hadn't figured out next steps. FGDs were conducted in mixed groups with alumnae but in geographically separate groups with other adult stakeholders. The study received ethical approval and research permission by Cornell University's Institutional Review Board (IRB0010701), the Tanzania Commission for Science and Technology (COSTECH) and the Tanzanian Office of the President (TAMISEMI).

Study participants

Participants in the process tracing study baseline data included program alumnae in addition to four categories of key stakeholders: teachers at schools where Binti Shupavu operates, parents of Binti Shupavu participants, Binti staff (mentors, program managers, and social workers) and motorcycle taxi or 'bodaboda' drivers who frequently interact with Binti students on their way to and from school.

Data was collected in 12 focus group discussions (FGD) in two different geographic locations in Tanzania, and 3 Key Informant Interviews (KII) held via zoom. FGDs were conducted in Swahili and translated and transcribed into English. IDIs were conducted in English. Data was anonymized and participants were assigned pseudonyms for analysis and write-up. A total of 52 participants were interviewed including: 12 Binti alumnae, 13 Binti staff (including mentors), 13 parents, 9 teachers, and 5 bodaboda drivers operating taxi services near a Binti Shupavu school. Participant profiles and interview composition are illustrated in Table 1.

Data analysis

All authors participated in data analysis bringing various geographic, racial and sociocultural positionalities as Tanzanian, Kenyan and Americans, coming from both rural and urban upbringings and diverse professional backgrounds (academic and practitioner) in the education, public health and girls education sectors. The authors worked collaboratively valuing equally the different expertise each brought to the analysis process whether it was technical (training in research and research methods), practical (knowledge of program design, management, curriculum and instruction), sociocultural (knowledge of local context and language) or content-specific (expertise in public health, pedagogy, curriculum design, etc).

Analysis was conducted in Atlas.ti in three rounds, using a combination of thematic coding and process tracing mapping (Beach & Pederson, 2016). Round one began with the semi-structured coding of all transcripts allowing some codes to organically emerge while also coding for predetermined concepts (Patton, 2022). Predetermined codes were developed in four thematic categories designed to allow for the mapping of outcomes and related causal processes against environmental

Table 1. Participants and Interviews.

Focus Group Discussions (FGDs), Total FGDs = 12					
Participant Type	Region: Kilimanjaro	Region: Arusha	Women	Men	Total Participants
Binti Alumnae- Transitioned to higher education	Mixed		6	–	6
Binti Alumnae-Still figuring out next steps	Mixed		6	–	6
Binti Mentors	4	4	8	–	8
Binti Social Workers	–	2	2	–	2
School Teachers	5	4	6	3	9
Parents	4	9	11	2	13
Bodaboda Drivers	5	–	–	5	5
Key Informant Interviews (KII), Total KIIs = 3					
Social Worker	1	–	1	–	1
Program Manager	1	–	1	–	1
Program Director	1	–	1	–	1
Total Participants			**42**	**10**	**52**

constraints (Beach & Pederson, 2016): environmental factors (contextual factors which either aid or hinder program outcomes), program structure, delivery mechanism, or curricular content (which represent experiences of the intervention) and specific program outcomes. Program structure and delivery codes were developed closely with the study team's GLAMI co-investigator to ensure a comprehensive list of hypothesized program factors that might influence outcomes.

The authors met biweekly to discuss emergent codes, and refine the use and definitions of pre-determined codes. Over the course of round one, the authors identified two additional themes from the data: girls' recommendations for the program and a code for 'program process' which indicated areas where participants described the causal mechanisms of the program in detail. In a second round of coding, the authors identified overlapping codes by using code frequency displays and either combined, renamed or separated these codes for conceptual clarity. Figure 2 shows the basic coding structure for our analysis along with the frequency count of the code indicating the number of times it was applied in the data.

During round 3, outcome codes were mapped chronologically and hierarchically in terms of first order outcomes, second order outcomes, and third order outcomes based on the depictions of the causal processes in the 'program process' codes. These descriptions were synthesized into visual representations of causal pathways starting from the corresponding program input (curriculum or program structure and delivery codes) to first order, second order and third order outcomes triangulating views from different types of focus group participants (parents, teachers and community members). First, second and third order outcomes were visualized as a teleological pathway leading towards the ultimate programmatic outcomes investigated by the experimental side of the study: agency and school achievement. Non-curricular aspects of program structure and delivery were mapped onto specific environmental constraints they aimed to address and were viewed as

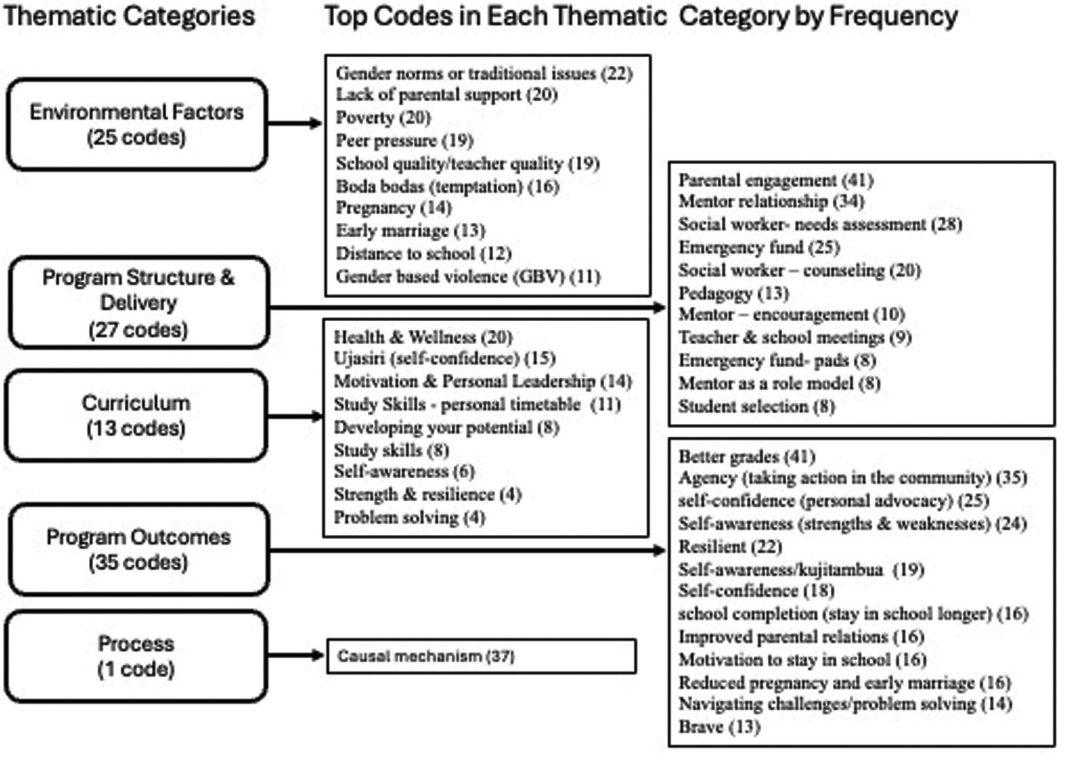

Figure 2. Coding Structure and Frequency.

'mediating factors' in the causal path. Analysis was conducted first in excel (to produce a chronology and hierarchy of outcomes) and then later visualized by the authors in working versions of Jamboard and Powerpoint and ultimately refined and reproduced in Miro.

The process tracing was guided by the program process codes in which participants articulated in detail their experience of changes as a result of the program interventions. To build confidence in the identified causal pathway as articulated from program process codes, the frequencies of outcome codes were examined by participant type, and the frequency of co-occurrence of outcomes codes alongside curriculum and program structure codes, allowed researchers to verify evidence depicted in the program process explanations. In some cases researchers' expertise in youth development and or knowledge of the program was also used to triangulate the mapped causal pathway. The most frequently mentioned outcome codes were also examined by the researchers in different visualizations produced by Atlas.ti. Ultimately, the chronology of outcomes vis a vis specific program components were mapped in a complex series of pathways stemming from each curriculum module and mediated by aspects of program structure and delivery. This paper explores the pathway associated with the first year of the program and the most prominently featured module in the curriculum: Health and Wellness.

Findings: Connecting menstrual health and hygiene to soft skills outcomes

Given that the broader Binti Shupavu study tracks the program's impact on girls' agency and then estimates the causal effect of increasing agency on girls' education outcomes. Unsurprisingly, 'agency' (girls taking action to change their lives) and 'better grades' were the two most frequently cited outcomes in our data across participant groups. For our process tracing analysis, we looked at which aspects of the Binti program including specific curriculum modules, specific content, complimentary program interventions and delivery mechanisms, were described by stakeholders in conjunction with agency as the key end-outcome.

The Binti Health and Wellness (HW) curriculum module was immediately identified within data with higher frequency than any other aspect (content or module) of the Binti Shupavu Curriculum. After parental engagement and mentor relationship, the HW curriculum was also the most frequently mentioned program component, coded 40 times in our data, and referenced specifically by program alumnae more frequently than any other aspect of the Binti program. Alumnae described menstruation education and self-care (key aspects of the HW curriculum) as one of their first and most positive experiences with the Binti program in the first year.

To understand the cognitive process unfolding from the HW curriculum, we looked at program process descriptions across stakeholders. Program process' codes were identified 37 times throughout the data, with the most frequent descriptions of causal process being attributed to Binti staff (19) and alumnae (13), followed by Teachers (3) and parents (2). All stakeholder groups (alumnae, parents, teachers, and program staff) identified a clear relationship between the Health and Wellness Curriculum, and several outcomes beginning with better self-care (personal hygiene), leading to '*kujitambua*' which we understand as self-efficacy or self-confidence in 'doing things,' what participants described as 'bravery' and 'good decision-making.' and self-advocacy.

> Binti Shupavu knows what to do, when to do it and has set priorities. Many scholars are leaders at school. (Binti Mentor).

Although *kujitambua is* literally translated from kiswahili as self-awareness, in our data *kujitambua* has an explicit orientation towards future self or 'knowing what to do' and how to handle yourself in a difficult situation. *Kujitambua* ('self-awareness – knows what to do') was coded 22 times in our data and was distributed fairly evenly across stakeholder types.

> [Binti Shupavu] is the one who is confident even when her situation at home is difficult but she is still confident. Secondly, she is not afraid of going anywhere, and can face any challenge and solve it. She is a girl and she is determined to achieve them. (Lucy, alumna).

Girls associate *kujitambua* with the application of knowledge around menstrual hygiene to the practice of self-care.

> I think the entire curriculum is all about our real potential. It made us believe in ourselves and not wait for others' motivation. Not only that but also personal hygiene; if you're not clean you'll get sick. Since we started learning that everyone must loves herself, we all looked smart even if we had one uniform. (Annah, alumna)

In turn, these outcomes of *kujitambua* were traced by participants to two different types of skills: internally facing and externally facing. In participant quotes from both girls and parents coded as 'program process' we identified multiple examples of kujitambua and self-confidence being linked to what both adults and girls described as good decision making around resisting temptation from men and boys.

> Binti Shupavu girls have goals, have decisions, have a timetable, have friends that she studies with and she has a person that supports her to reach her goals. A girl who hasn't been through, doesn't know how to solve problems. She doesn't know how to reject boys when approached, she might accept and end up getting pregnant and be expelled from school. But a girl from Binti Shupavu when approached can reject and confidently say I don't want, leave me alone. I want to achieve my goals, so boys will know that she is different. But if she is not a Binti Shupavu she'll be shy, biting her fingers and can't tell a perpetrator to his face. So Binti Shupavu can say I don't want this, I want to achieve my goals first. (Salma, alumna)

Externally-facing skills appeared in our data as 'being brave' or having an 'openness' to speak and express yourself. We synthesized participant's descriptions of the word 'brave' and 'self-confidence' as a higher order type of self-esteem related to personal advocacy. 'brave' in this context includes an awareness of goals and life direction combined with the ability to advocate for that direction and stay the course, despite challenges. Again, specific challenges identified by participants as those that built their inner bravery, were those associated with menstruation and menstrual stigma, or good decision-making.

> Binti Shupavu can build up self-confidence and can make you become strong. Sometimes it is really difficult to have the courage to talk in front of people. So through Binti I have learnt how to be brave. Also having self-confidence, and sometimes when you are in your period cramps you feel less secure, and scared that people might mock you for your period cramp days. (Jamila, alumna)

> Binti Shupavu are girls who are never tempted. You can't lie to them. They have the ability to stand for what they believe in … and overcome challenges. (Fatma, parent)

> Binti Shupavu is the one who can make decisions and stand by them, when she says no it's no. She is also confident to speak about anything. (Bella, alumna)

Figure 3 depicts our summary of the causal pathway emerging from the health and wellness curriculum and described in the section above. In the following sections we offer narratives from girls of how this causal process unfolds linking better-hygiene to *kujitambua* and skill development. Our data showed that these processes were directly mediated by the other most frequently cited program components of the Binti Shupavu program: parental engagement, the program social worker's role in identifying girls' material needs and supporting girls' access to menstrual hygiene products and other forms of material support, and girls' positive relationships with the program mentor and parental engagement. These mediating components of the program design and delivery, directly mitigated the three most pressing environmental challenges identified by participants: 1. Gender norms or 'traditional issues' (22 codes), 2. Lack of parental support (20 codes), and 3. Poverty (20); thus enabling the process of learning to unfold.

Process step 1: Demystifying the shock menstruation & puberty

Negative emotional experiences of menstruation including bullying, embarrassment and stigmatization (Benshaul-Tolonen et al., 2020), and limited ability to effectively navigate menstruation can cause girls to 'internalize a sense that their bodies are beyond their control' (McMahon et al., 2011,

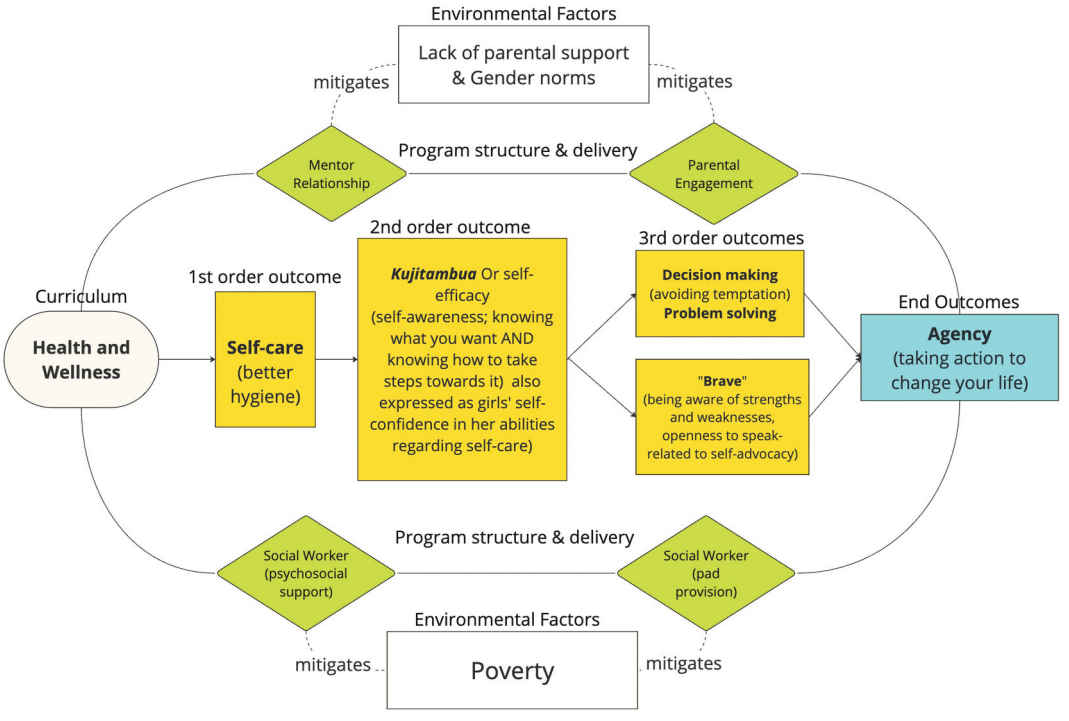

Figure 3. Proposed Causal Pathway Linking Menstruation Education to Agency.

p. 9). The implications of internalized powerlessness can have lasting impact on social emotional health (Crone & Dahl, 2012; Yeager, 2017, p. 82). The HW curriculum content on personal hygiene and self-care alleviates the anxiety and stress surrounding menstruation and was frequently cited by participants as contributing to improved school attendance and confidence to participate in class.

> You know when you are aware of your menstrual cycle it makes it easy for you to avoid unnecessary embarrassment because I'll be prepared. Even though specific dates do change, keeping track of your cycle is a good thing. (Bella, alumna)

While school curriculum in Tanzania features sexual and reproductive health (SRH) and menstruation content, teachers hold their own stigmas surrounding menstruation and can be reluctant and/or feel ill-equipped to discuss menstruation due to inaccurate information and the lack of teacher training (Jewitt & Ryley, 2014; Korir et al., 2018; McMahon et al., 2011). Binti Shupavu has increasingly bridged this gap for teachers.

> Binti has helped us (by) teaching them earlier on to get them prepared, now even the younger ones walk with pads in the bags even if they still have not gotten their periods. This helps us a lot because it prepares them psychologically, even if it happens she does not get shocked. Yes she doesn't get shocked. They have been taught how to help each other. (Teacher, Arusha)

Both teachers and parents observed marked differences in how knowledge about puberty and menstruation changed how girls carried themselves and engaged in their family and school activities.

> [My daughter] she has learned a lot, she has learnt about upbringings, body changes, they are being taught on how to be aware of what they are supposed to do … sometimes some girls when they come across such situations when it [periods] suddenly come they tend to get shocked but in Binti Shupavu they get to be told about everything and that it's a normal situation and when they come across such a situation they are supposed to do this or that which is quite different from the girls back then during our time. (Mr Massawe, parent Arusha)

Process Step 2: Building kujitambua through self-care

Demystifying menstruation, alleviating the shock of menarche and supporting girls in feeling psychologically and materially prepared for menstruation fostered a growing sense of pride and responsibility for girls' own self-care and self-organization. Participants frequently mentioned personal hygiene as an impactful topic, linking menstrual hygiene to behaviours of self-accountability and confidence during and after menstruation.

> They used to teach us well, a girl should be clean and smart at all times, how we are supposed to behave, how to track your menstrual cycle, and being confident. (Lucy, alumna)

Girls expressed their growth in personal hygiene practices alongside broader changes or 'differences' in behaviour and self-pride along with personal accountability.

> I was very untidy when I was in form one. I didn't care when my socks were dirty or my shirt was dirty, I didn't. But by the end of form two I become different. (Debora, alumna)

Parents and teachers also highlighted these changes in Binti Shupavu scholars/program participants:

> I have noticed that she has become completely different. If it is cleanliness, she is clean now, and I am not worried about that now. Right now, even if she is in her period you won't recognize her, it is not easy to recognize her, maybe if you are a parent. (Mama Agness, parent)

We have shown that gendered socialization can have a particularly adverse impact on the self-esteem of adolescent girls (Slater et al., 2001) and that girls can carry the menstrual stigmas they experience during this time throughout their reproductive lives with lasting effects on the sense of self. Our data reveals that the reverse is also true: positive experiences of menstruation have a ripple effect on girls' social emotional competencies. Alumnae articulated a direct link from, self-care during menstruation to broader skills related to problem solving, and a growing sense of *kujitambua*.

> I have learned a lot of life skills, the ways to struggle in life, how to face challenges in life and how to solve them. Also we learned about personal hygiene. For example when you're in your periods you can help out yourself." (Suzan, alumna)

When asked what was their favourite topic in Binti Shupavu, many alumnae were quick to express how 'happy' they were to learn about self-care and to 'get to know the way my body is.' These explanations help us to understand the extent to which menstrual health presents huge challenges for girls during puberty in ways that dominate their experiences during this time.

> Maybe sometimes some friend has a teared sweater, or out of sanitary towels. So sometimes a friend might miss classes because she is out of sanitary towels. (Naima, alumna)

> . . . We used to have water challenges because we had to walk a long distance to fetch some. They'd fail to get water to clean themselves so they opt to skip class. (Khadija, alumna)

Process step 3: Becoming 'brave' and building soft skills

The magnitude of the day-to-day stress of menstruation also highlights how the act of successfully navigating menstruation can be a powerful way to build girls' soft skills and confidence in problem solving. The process of learning how to take care of the physical self and navigate challenges related to water, blood capture, privacy, and physical or emotional feelings of distress was profoundly impactful for our participants.

Research shows that in response to material challenges of menstruation and fear of social ostracization, girls commonly institute self-imposed restrictions that limit mobility, inhibit participation in school and public life, and pose significant risks to girls' health and wellbeing (Jewitt & Ryley, 2014; Korir et al., 2018; Mason et al., 2013; Morrison et al., 2018). For Binti participants, menstruation

became an opportunity to practice resilience and apply concrete skills related to personal-problem solving, and personal advocacy in order to overcome these challenges. Such changes were obvious even to bodaboda drivers who had no direct relationship to the program or participants, and who were often responsible for harassing girls on their way to and from school.

> When you try to tempt them [school girls] it is very rare for them to reject and they are very weak. I do not know if the Binti Shupavu scholars could be that weak. I am not saying for the purpose of being kind but I believe it [Binti Shupavu] helps the students so much. If you take a look at the students who are program scholars coming out of the school gate, they look different from the rest.
>
> Interviewer 1: How are they different from the rest?
>
> Participant 2: How they walk.
>
> Participant 4: They way they just look, they look confident compared to the rest. They walk in groups with certain poses (. . . all laughing. . .) This is a very good thing. (Bodaboda Drivers, Arusha)

Similarly, parents described, perhaps better than any other stakeholder, the ways in which their daughters developed and exercised this growing sense of 'bravery' which built resilience, problem solving and self-awareness.

> She is also brave to face any challenge that she face because at first she used to give up whenever she faced challenges. But now I thank God she has become brave, and every time she comes home she tells me 'mother today we have been taught' (because they have lessons on Mondays). She has already taught me and now I am aware. I am very happy my daughter has become different; she is brave because she used to be afraid but now she is brave and has self-awareness. (Mama Eveline, parent)

Mediating Factors: Reducing stigma, shifting gender norms

The process of self-care, *kujitambua* and skill building was mediated and thus accelerated by community and individual change processes that served as direct links mitigating some of the girls most pressing environmental challenges identified in our data: lack of parental support and gendered social norms. As noted, in Tanzania interactions between elders (parent/teacher) and young people are often influenced by 'respect and obedience' values (Jukes et al., 2018). Thus young people's curiosity is not prioritized, rather young people are expected to follow provided instructions (ibid). In Binti Shupavu, the program pedagogy is the opposite of this norm, utilizing a girl-centred approach that employs engaging methods such as role plays, story sharing and fun activities which centre girls' interests and developmental needs. This pedagogical approach supports girls developing healthy relationships with adults – some of them for the very first time.

> [my daughter] comes and tells me that those ladies (Mentors) teach us a lot of things like how to live, on your side the way you teach them is quite different from how we parents do it sometimes because there are times she can't tell me some stuff but she can probably tell her mentors. (Mama Nemama, parent).
>
> Our girls have been happier and they are closer and more comfortable with their mentors compared to us teachers. (Madam Samantha, teacher)

Ecological models of human development within public health identify the importance of family and community involvement to adolescents' developmental outcomes (Beier et al., 2000; Bronfenbrenner & Ceci, 1994; Cherewick et al., 2021). In the context of Binti, alumnae expressed confidence in taking action, because their actions were also guided by an adult they trusted.

> Madam Rachel came to school and she was teaching a Binti class when I entered. . . . When she was teaching I got an opportunity to ask her a question she allowed me. I asked if it was possible that I could do something without my will. She said one can do something just because of the environment or her own will, that is when I started loving Binti Shupavu and I joined. (Salma, Alumna Moshi)

In addition to facilitating healthy relationships with mentors parental engagement sessions bridged the communication gap between parents and daughters and supported a reframing of menstrual health conversations between parent and child. These sessions were advertised to parents as 'support' to help them navigate the challenging period of adolescence with their children. In the sessions, Binti staff encouraged parents to simply be open to discussions about menstruation and puberty with their daughters while Binti curriculum supported girls' bravery in initiating the conversations with their elders.

> I noticed some changes when I went home on holidays and by then they had already met (Parent engagement) and they were trained about the program. When I asked her (mother) how the training was, she sat down with me for the first time and started talking about menstrual cycle and puberty. We never did that, so Binti helped give her the confidence she needed. (Salma, alumna)

The result of this two-way engagement facilitated change. Although the role of knowledge transmission was traditionally held by grandparents, at face value, parental engagement sessions appeared to close the gap left by the disruption of traditional knowledge systems (Figure 1), while simultaneously alleviating social stigma. Filling this knowledge gap supported girls' self-confidence by shifting norms around menstrual silence and reconstituting the relationship between parents and their daughters.

> For native Arushans it is difficult to sit and teach a girl child. But now after joining the GLAMI program she has become brave, she comes and tells me they have been taught to maintain their wellness, I mean she became open because she was afraid to tell me that she had grown and reached the puberty stage. . . . when you teach them she becomes brave and she doesn't hide anything from me. (Mama Evaline, parent)

In addition to improving parents' communication with their children, parental engagement sessions worked to shift household and community level gendered norms that historically lead to girls' dropout. Parental engagement has the clear effect of mitigating contextual factors of girls' experience related to social norms that traditionally privileged boys.

> Now fathers are supporting their children because this organization has helped us mothers because when you want your daughter to study and complete her education you find out that her father has already taken the bride price for your daughter and is forcing her to marry. Now they have a certain fear. [all participants clap]. (Mama Eveline, parent)

Discussion: 'Cognitive Bridges' menstrual health and agency

In applying knowledge from the Health and Wellness curriculum and practicing self-care, girls are building confidence in their own abilities and developing *kujitambua* (or self-efficacy) in the process. By using knowledge and relationships gained in Binti sessions to solve the challenges associated with their periods including accessing methods of blood capture, adequate disposal, and engaging peer and adult support, they are becoming *brave* self-advocates at home and at school, while building skills in problem solving and decision-making. But why does the simple act of applying knowledge lead to such transformation?

Jacobs and Wright (2018) theorize a cognitive 'bridging' process for integrating non-cognitive outcomes into youth's lives. In their paper, the authors argue that the experiential application of learning gained within a program builds a 'cognitive bridge' and motivation for continued use of programmatic learning outside of the program setting (ibid pp. 11). Jacobs & Wright's conceptual model of life skill transfer (as applied to youth sports programs) also provides a useful theory for understanding the causal process of Binti Shupavu's HW Curriculum. Our data reveals that the practice of 'doing' self-care for girls, and 'solving' menstruation-related challenges is the cognitive bridge that helps build girls' ability to take action more broadly in their lives (agency). For Binti Shupavu participants' agency manifests first and foremost as positive decision-making and advocacy around their own bodily autonomy.

Girls described developing new-found abilities to '*say no*' in refusing the advances of men and boys and feeling strong enough to *resist* 'temptation' – a theme that emerged in almost every transcript related to pervasive experiences of sexual harassment in girls' daily lives. Bodaboda drivers who, according to girls, were the most frequent perpetrators of sexual harassment, described Binti participants as strong and 'confident' noting that they carried themselves differently from their peers. Parents and teachers identified the same changes describing Binti participants as 'self-assured, ' 'self-aware.'

Feminist research identifies an explicit relationship between gender transformative sexual and reproductive health initiatives and bodily autonomy as an indicator of sexual agency (Coates & Allotey, 2023). Binti participants' self-described 'strength' surrounding sexual decision-making is an example of what Chris Bobel calls an 'authentic and agentic relationship with the body' resulting from successful de-stigmatization of menstruation through 'body-positive' culture (2019, p. 285). In our study, engagement with parents around their daughters' menstrual needs simply *normalizes* menstruation and its associated challenges, and, when coupled with self-care and problem solving practice, creates a sense of control, confidence and agency over girls' own bodies that ultimately produces a body-positive culture as an end result.

Parental engagement sessions only occurred once a year over the course of the four year program, and yet had a transformative effect. Hennegan et al. define holistic menstrual health as comprising four key components: access to information, ability to care for one's own body, access to medical diagnosis and treatment if/when needed, and 'experience of positive and respectful environment in relation to the menstrual cycle' (2021, p. 32). Although engagement sessions are few, they fundamentally shift the culture around menstruation in girls' primary environment – the home. In doing so, Binti Shupavu achieves two important outcomes: alleviating the challenge of disruption of customary knowledge transfer systems (Figure 1) and providing a '360 degree' approach to challenging menstrual stigma by engaging families and community (Bobel, 2019, p. 297) thereby creating a 'positive environment' for menstruation (Hennegan et al., 2021). By involving parents as allies in supporting their daughters' menstruating needs, knowledge systems are repaired, stigma is reduced, and harmful norms start to shift at home and in the community.

Our research joins others such as Hennegan et al. (2021), and Coates and Allotey (2023) who argue that while 'hardware' interventions (pad provision) are important for the most vulnerable, they are ultimately insufficient to produce transformative change for girls. Approaches which destigmatize menstruation and upend harmful gender norms within the community are what will produce lasting change. While policies in East Africa may have previously failed to dismantle menstrual stigma (Olson et al., 2022), our research suggests that non-formal life skills programs are a promising approach to girls' menstrual health and agency.

Finally, we propose that the soft skills developed within the Binti Shupavu program are consistent with locally-developed understanding of adolescent girls' agentic capacity. In a study conducted across four countries in East Africa with 17 youth-serving organizations, the authors develop a framework for measuring girls' agency as a context-specific construct (2023). Agency is assessed as four domains of internally and externally facing skills and beliefs: self-belief, environmental beliefs (pertaining to the rigidity of gendered norms in the environment), self-governance skills and leadership skills (understood as the ability to influence others) (ibid).

Our findings align with this framework providing evidence that the Binti Shupavu program directly affects all four of these domains of agency. In learning how to navigate menstruation and the practice of self-care, girls develop and apply practical skills in kujitambua or self-governance – defined as the daily process of problem solving, self-organization and goal setting (ibid, p. 399). In turn, practicing kujitambua improved girls' self-confidence – a change that was noted by all stakeholders in the study. Similarly, girls' descriptions of 'bravery' and 'openness' were contextualized in examples of influencing others and advocating for their own rights, needs, and life direction – clear capacities related to leadership skills as defined in the East Africa framework (ibid). Perhaps, most importantly, however, girls' experience of destigmatizing

menstruation and conversations within the home provided ample opportunity for girls to develop what Sidle and Oulo call 'positive environmental beliefs' a gender-specific domain of agency measuring girls' beliefs in the rigidity of the gendered norms in their environment (ibid).

Conclusion

Our study suggest that menstrual health is a powerful way to build girls' agency in educational settings. In order to achieve this outcome, our data confirms what others have noted that transformative menstrual health education must include information about self-care in addition to the emotional and social aspects of menstruation (Olson et al., 2022, p. 15) and needs to focus on the destigmatization of menstruation (within the individual and household). Our findings suggest that destigmatization of menstruation within the home and within girls' lived experience can be a catalyst for gender norms change.

We offer a detailed map of the causal process (Figure 3) of Binti Health and Wellness curriculum and shows how learning about menstruation and puberty in a supportive environment leads to improved agency for girls. Whereas community and school-level stigmatization of menstruation create a specific set of challenges to girls' development of healthy self-concept and self-efficacy in rural Tanzania, our findings suggest that navigating menstruation provides a monthly opportunity for girls to apply their skills and knowledge to address a significant personal challenge and thus provides an immediate boost to girls' self-confidence.

Menstrual health education can fill gaps left by the breakdown in traditional menstrual knowledge transfer systems (Figure 1), and importantly 'demystify menstruation and alleviate the shock' surrounding menarche. This supports the healthy development of girls' emerging sense of self-efficacy and confidence related to 'knowing what to do' to take care of themselves. These outcomes can be enhanced by simultaneous intervention to shift parental views on how to proactively support girls through this phase of life, and engage in open conversations about previously taboo subjects.

For practitioners and policy makers we'd like to highlight a few things that we feel are most relevant for scaling impact and replicating outcomes in other settings. First, menstrual health education (as a comprehensive social and emotional undertaking) provides important 'cognitive bridging' opportunities to support the acquisition and transfer of soft skills (or social emotional learning) outcomes to girls'-wider lives through the application of knowledge gained round self-care and personal hygiene. Second, destigmatization of menstruation at home and within the individual can be a catalyst for broader gender norms shift, and such processes can be achieved with relatively low-levels of engagement (e.g. once a year in the case of Binti Shupavu) Finally, education programs which centre menstrual health curriculum can support the development of girls agency when coupled with appropriate community engagement. We join other scholars in recommending that efforts to empower girls, and improve educational and health outcomes, must necessarily incorporate other duty-bearers in girls' lives and include explicit efforts to address harmful sociocultural norms, practices, taboos and stigmas in girls' communities and homes (Alhelou et al., 2022).

A key limitation of our study is that there is not yet confirmation beyond stakeholders' retrospective reports of causal processes and how they unfold. Although triangulating between girls', parents', and Binti staffs' views on the program strengthens the findings in this paper, our data as of yet is retrospective and cross-sectional and therefore limited. We plan to strengthen this analysis with longitudinal data of the Binti Shupavu program over the course of the four year study.

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