Unveiling Cultural Beliefs and Perceptions towards Early Breast Cancer Detection and Treatment among Indigenous Penan Women in Sarawak, Malaysia: A Qualitative Study

Rekaya Vincent Balang[1], Fitri Suraya Mohamad[2], Juriah Sulehan[3], Keh Li Yew[1], Zai Yang Yong[4], Zulkifli Jantan[3], Melissa Siaw Han Lim[1,3]*

[1]Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak (UNIMAS), Kota Samarahan, Malaysia

[2]Institute of Borneo Studies, Universiti Malaysia Sarawak (UNIMAS), Kota Samarahan, Malaysia

[3]Sarawak Breast Cancer Support Group, Kuching, Malaysia

[4]Department of Pharmacy, Sarawak General Hospital, Kuching, Malaysia

***Corresponding Author**

DOI: https://doi.org/10.47772/IJRISS.2026.100300420

Received: 24 March 2026; Accepted: 30 March 2026; Published: 11 April 2026

ABSTRACT

Background: Early detection of breast cancer plays a critical role in reducing morbidity and mortality. However, uptake of screening practices remains uneven across many rural communities in Sarawak, contributing to late diagnoses and widening the disparities in access to timely treatment.

Objective: This descriptive qualitative study explores how cultural beliefs, social norms, and personal perceptions shape women's attitudes and behaviours toward early breast cancer detection with a focused lens on the Penan, an Indigenous minority group in Sarawak.

Methods: In-depth semi-structured interviews were conducted with women aged 18–60 in a rural area of Sarawak to elicit their lived experiences, health beliefs, and decision-making processes regarding self-examination, clinical screening, and seeking medical consultation.

Results: Thematic analysis revealed five overarching themes: (1) Trust, Experience, and Accessibility: Determinants of Willingness to Undergo Clinical Breast Examination; (2) Cultural interpretations of breast cancer; (3) Fear and stigma influencing breast cancer screening behaviour; (4) Logistical refrain for seeking medical treatment and breast cancer screening; and (5) Factors Influencing Future Willingness for Clinical Breast Examination. These cultural and perceptual factors collectively influence screening behaviours, often creating barriers despite awareness of breast cancer risks.

Conclusion: The findings highlight the need for culturally responsive health communication strategies and community-engaged interventions that address sociocultural concerns while empowering women to participate confidently in early detection practices.

Keywords: Breast Cancer, Early Detection Strategies, Cultural Beliefs, Indigenous Penan, Sarawak Borneo.

INTRODUCTION

Breast cancer remains the most commonly diagnosed cancer among women globally, and early detection through population-level screening (e.g., clinical breast examination and mammography) is a central strategy for reducing mortality and improving treatment outcomes. Yet the benefits of early detection are unevenly realized across contexts due to social, cultural, and structural barriers that shape health beliefs, risk perception, and help-seeking behaviours. In Malaysia, national and subnational studies consistently report low and variable screening uptake, with a substantial proportion of women perceiving screening as necessary only when symptoms appear, an attitude that delays early detection and fosters late presentation (Galen Centre for Health and Social Policy, 2021; Institute for Public Health 2020 & Ministry of Health Malaysia, 2020; Ministry of Health Malaysia, 2019; Norsa'adah et al., 2011). Previous qualitative work in semi-rural communities similarly highlights a complex mix of barriers, ranging from limited health literacy and stigma to access constraints and service pathway fragmentation which impede routine screening and timely referral (M. S. H. Lim et al., 2025).

Cultural beliefs and norms are pivotal in shaping responses to breast cancer risk. Various studies, including systematic reviews, synthesize recurring themes—fatalism, modesty norms, mistrust, language barriers, and gendered expectations—that mediate the relationship between awareness and action, often dampening the uptake of screening even where services exist (Ahmadian & Abu Samah, 2012; Kolahdooz et al., 2014; Sirili et al., 2024). Malaysian evidence further suggests that negative beliefs about screening (e.g., fear of anxiety, financial constraints, lack of awareness, and doubts about efficacy) significantly reduce attendance at mammography and clinical breast examination, and these beliefs are patterned by sociodemographic characteristics and ethnicity (Moey et al., 2022; Schliemann et al., 2022; Wan Mamat et al., 2022). While mass media campaigns can shift certain health beliefs (e.g., perceived susceptibility), they may not fully overcome entrenched barrier perceptions without tailored, community-engaged strategies.

The Penan are an Indigenous people of Sarawak, historically characterized by nomadic or semi-settled hunter-gatherer lifeways, and today residing across Eastern and Western Penan regions in the Baram, Limbang, Belaga, and adjacent districts. Penan sociocultural systems emphasise communal decision making, reciprocity with the rainforest, and traditional communication practices, features that both reflect and sustain distinctive health worldviews. Religious orientations include Bungan (folk religion) and widespread Christianity, reflecting decades of missionary settlement and sociocultural change (King, 2025). Contemporary accounts underscore persistent structural vulnerabilities, including remoteness, mobility, and environmental change (e.g., logging) that affect access to services and the continuity of care.

Although breast cancer–specific data among the Penan are sparse, research on other health conditions illuminates patterns highly relevant to early detection. For example, a study on leprosy in rural Baram documents low awareness, nomadic/semi settled movement, overcrowding, nutritional challenges, and limited diagnostic capacity as drivers of delayed diagnosis and ongoing transmission, alongside fear of procedures and infrequent active case detection (Ling, 2014). These findings resonate with Malaysia-wide qualitative insights on breast cancer screening in rural communities, namely, travel distance, costs, primary care capacity for clinical breast examination and education, and disconnects between primary and secondary care pathways (M. S. H. Lim et al., 2025; Schliemann et al., 2022; Wan Mamat et al., 2022). Taken together, the evidence points to a plausible constellation of cultural and structural determinants that may uniquely shape Penan women's perceptions of breast cancer risk, trust in services, willingness to undergo intimate examinations, and practical ability to access screening.

Despite the growing literature on breast cancer screening in Malaysia, Indigenous perspectives, particularly Penan women's beliefs and lived experiences remain underrepresented. The local Non-Governmental Organization, the Sarawak Breast Cancer Support Group, has reached out to over 2000 women living in the interiors of Sarawak, but only 7.4% of them were Penan women (M. Lim et al., 2025). National survey (Mohan et al., 2021) and rural qualitative studies offer crucial insights (M. S. H. Lim et al., 2025; Schliemann et al., 2022; Wan Mamat et al., 2022) but are not disaggregated to capture Penan-specific cultural logics and barriers. At the same time, studies of Penan society emphasize distinctive lifeways, religious syncretism, and communication norms that could meaningfully influence health seeking for conditions requiring confidential examinations and specialized equipment (e.g., mammography) (Goagoses et al., 2020). There is, therefore, a critical need for in-depth qualitative inquiry into Penan cultural beliefs, perceptions of breast cancer and screening, and the interplay between community norms and health system access. Such inquiry can inform culturally responsive, community-anchored interventions that respect local values, address privacy and modesty concerns, and bridge structural gaps in the screening pathway.

The Penan community is part of the Dayak group in Sarawak, Brunei, and Kalimantan (Sercombe, n.d.). Sarawak is home to an estimated 16,000 tribal Penans, living in remote areas of the Baram and Belaga districts, with 77% living in permanent settlements, 20% leading a semi-nomadic lifestyle, and another 3% living as nomads. Almost two-thirds of the Penan population live in the Baram, Tutoh, and Limbang areas and are referred to as the Eastern Penans. Meanwhile, Western Penans live mostly in the vicinity of Bintulu and the Belaga district (Lyndon et al., 2013). Primary health care is delivered to the rural community through various modes, such as static health clinics, mobile health teams, and flying doctor services.

We will address self-care issues, which directly relate to how women take care of their breasts (a known private area in Eastern cultures). It is necessary because the primary intention of this study is to investigate their awareness of breast self-examination and knowledge about breast cancer. This study aims to close the gap in disseminating breast cancer awareness, early detection, and screening of breast cancer in marginalised populations of Sarawak, Borneo. It also aims to not only promote the importance of early breast cancer detection but to call attention to the cultural needs and beliefs of marginalised communities.

METHODOLOGY

The study utilised a descriptive qualitative research design to elicit women's lived experiences, cultural beliefs, and decision-making processes regarding early breast cancer detection. This approach is suitable for exploring nuanced socio-cultural contexts and service access pathways. It is consistent with prior Malaysian work on screening barriers in rural communities that mapped complex, multi-level influences on help-seeking and pathway navigation. To capture beliefs that shape screening behaviour (e.g., perceived susceptibility, perceived benefits/barriers), the design was informed by health belief constructs documented for Malaysian women and adapted for the Indigenous context.

The study was conducted at Lusong Laku, Belaga, Kapit Division, Sarawak, Malaysia. A settlement of Penan communities in the rural area of Belaga, where fully settled Penan occupy the villages. Longstanding features of Penan sociocultural life, specifically in communal decision making, religious syncretism (Bungan and Christianity), and traditional communication practices, were considered when planning engagement and logistics.

Purposive sampling was used for this study, where the researcher selects respondents from an unknown population, according to their own discernment regarding which respondent will be most informative (Stratton, 2024). The semi-structured interview was chosen because the researcher could explore, probe, and ask questions that illuminate a certain subject, and the respondent is able to determine the kinds of information produced about the subject, and the relative importance of each of them (Ruslin et al., 2022). Participants were approached, and interviews were conducted individually following mutual consent. The interviews were conducted in a conducive setting. An interview guide was formulated to guide the interviews in this study. Predetermined sample size guidelines are balanced with the principle of data saturation where recruitment should continue until no new themes or insights arise from further interviews (Polit & Beck, 2013). Data saturation was achieved after twenty interviews, as the redundancy of information indicated that the core thematic framework was fully developed. At this stage, further data collection from the target community was deemed unlikely to provide additional interpretive value or alter the established coding structure.

Twenty Penan Women aged 18 years and above who could speak and write Bahasa Melayu were purposively recruited for this study. The inclusion and exclusion criteria for this study are:

Inclusion Criteria	**Exclusion Criteria**
1. must be a female 2. must belong to the Penan Community in Sarawak 3. Must be living in an indigenous community for most	1. Gender identification other than female 2. Has lived more than 20 years until recently outside of her indigenous community 3. Has lived more than 20 years until recently in an

of her life (more than 50% of her life) 4. Aged above 18 years	urban area in Sarawak 4. Subjects not consenting to the interview 5. Subjects with cognitive impairment.

The Participant Information Sheet and informed consent were offered to participants voluntarily. The semi-structured interviews were conducted in a quiet, conducive area of the long house. Participants in this study was be given pseudonyms and their personal data are kept in a password-protected database and be linked only with a study identification number. The identification number will be used on the data sheets instead of participant identifiers. All data is entered into a password-protected computer. The Human Research and Ethics Committee at Universiti Malaysia Sarawak (UNIMAS) has approved this study.

The semi-structured interviews lasted 45-60 minutes and explored service delivery, outreach, and challenges along the pathway. Interviews were conducted in Malay at the participants' preference. All audio recordings were transcribed verbatim and categorised into themes relevant to this study. This step was undertaken using a thematic analysis approach, which, according to Anderson et al. (2021), is the most foundational of qualitative analytical procedures and, in some ways, informs all qualitative methods (Anderson et al., 2022).

The collected information was sieved, sorted, grouped, and assembled according to the question numbers, which served as the coding system. NVivo software was employed to create a systematic analysis of the transcripts. The data was transcribed and analysed using thematic analysis introduced by Braun and Clarke in 2006 (Braun & Clarke, 2006). Thematic analysis is a robust yet flexible method for analysing qualitative data that can be used within a variety of study designs and sample sizes. Hence, it becomes the preferable analytical approach for inexperienced qualitative researcher (Kiger & Varpio, 2020). Audit trails, such as reflective journals, were also used to contextualize understanding of the phenomena. This step ensures rigour by establishing the reliability and validity of the interview data (Coleman, 2022). Eventually, the transcripts were reverted to the respective participants, both before and after translation, to confirm their agreement with the content.

RESULTS AND DISCUSSIONS

Demographic data

This section presents the key findings from in-depth interviews conducted with women from a Penan village in Sarawak. The sociodemographic of the participants are shown in Table 1. The analysis explored how cultural beliefs, social norms, emotional responses, and structural realities shape perceptions of early breast cancer detection and influence screening behaviours.

Guided by a socio-ecological lens, the findings are organised around themes emerging at the individual, interpersonal, community, and health system levels. These themes illuminate not only the shared experiences of women across different cultural groups but also the unique perspectives of Penan participants, whose health decision-making is deeply intertwined with traditional belief systems, communal values, and the practical constraints of remote living environments.

Across the dataset, participants described a complex interplay between knowledge, cultural interpretations of illness, fear and stigma, family influence, trust in healthcare providers, and access barriers. While several themes were common across all groups, such as anxiety about screening procedures or concerns about modesty the Penan narratives revealed additional layers shaped by linguistic differences, traditional communication practices, reliance on community gatekeepers, and varied exposure to the formal health system.

The sections that follow present these themes in detail, supported by illustrative excerpts from participants. Together, they provide an in-depth understanding of how cultural and contextual factors influence early breast cancer detection practices, and how these dynamics manifest distinctively within Penan communities.

Table 1 Socio-demographic characteristics of study participants (n=20)

Participant	Age	Race	Occupation	Household income (RM)	Religion	Marital Status	No Children	Highest Education
AG	23	Penan	Housewife	200	Christian	Married	1	Primary 6
AL	36	Penan	Housewife	NA	Christian	Married	2 adopted	NA
CO	29	Penan	Housewife	1000	Christian	Married	2	Primary 1
KI	42	Penan	Housewife	NA	Christian	Married	5	NA
LE	27	Penan	Housewife	NA	Christian	Married	2	Primary 6
LI	29	Penan	Housewife	NA	Christian	Married	4	Primary 6
MA	31	Penan	Housewife	1000	Christian	Married	2	Form 2
MZ	27	Penan	Housewife	400	Christian	Married	1	Form 3
ME	33	Penan	Housewife	NA	Christian	Married	2	Primary 5
ML	25	Penan	Housewife	200	Christian	Married	1	Form 5
PH	30	Penan	Housewife	200	Christian	Married	3	NA
RA	31	Penan	Housewife	500	Christian	Married	3	Primary 6
RT	29	Penan	Farmer	NA	Christian	Married	1	Primary 5
RO	29	Penan	Housewife	500	Christian	Married	2	Primary 1
RS	30	Penan	Farmer	200	Christian	Married	NA	Primary 6
RW	22	Penan	Housewife	400	Christian	Married	1	Primary 6
RU	27	Penan	Housewife	50	Christian	Married	2	Primary 2
SE	27	Penan	Housewife	1000	Christian	Married	0	Primary 4
SS	21	Penan	Farmer	NA	Christian	Married	3	Primary 2
SY	30	Penan	Housewife	NA	Christian	Married	2	Primary 1

Theme 1: Trust, Experience, and Accessibility: Determinants of Willingness to Undergo Clinical Breast Examination

This theme highlights how participants' levels of trust or uncertainty toward modern medicine shaped their willingness to undergo clinical breast examinations (CBE). Across the study communities, trust was not a simple yes-or-no sentiment; rather, it emerged as a dynamic and layered factor influenced by past healthcare experiences, perceptions of healthcare providers' competence and intentions, and the degree of familiarity women had with medical services.

Medicines from clinics. But it has been 6 years I'm taking gastric medicine from doctor, but I feel it doesn't change anything. The more I drink, the more pain I feel. So, I looked for traditional medicines……. At first, I *tried with medicines from doctor, but the medicines were getting less and less effective. That's when I switch to traditional medicines.* (KI)

Interestingly, several participants consistently justified the continuous use of traditional medicine.

Yes. It is inconvenience to consult a doctor. We will resort to traditional medicine if public healthcare is out of reach. (LI)

Like Leaves, we book and drink the leaves….. We don't know the name of it. Some people here know how to search for it. The name is like UBAT URUL, UBAT LAKAT. (RO)

As a result, decisions about screening were intertwined with expectations about the accessibilities to modern medicine facilities and retrieving information from social media.

Many participants expressed confidence in modern healthcare and viewed clinical breast examinations as reliable, accurate, and essential for detecting problems early. For these women, trust in the medical system acted as a strong motivator to seek screening.

Yes, I heard a lot. Restriction in food intake such as fruits and cucumber. Breast cancer patients cannot pick fruits or else the lump will get bigger. (RW)

My mother always takes in traditional medicines; the elders usually take traditional medicines. To me, I prefer medicines from clinic, to take with water. The traditional medicines are bitter to drink (SY)

She did take traditional medicines also received treatment from Hospital. (ML)

At the same time, other participants conveyed varying levels of hesitation or ambivalence. Some were uncertain about the procedures involved in CBE or feared that the examination might cause discomfort, harm, or unnecessary worry. For these women, mistrust was often rooted in limited exposure to formal healthcare, past experiences of delayed or impersonal care, or difficulties communicating with healthcare providers (Peek et al., 2008). Mistrust did not necessarily mean rejection of medical care but manifested as caution, delayed decision-making, or a preference to monitor symptoms privately before seeking professional help (M. S. H. Lim et al., 2025). Two participants mentioned,

From outside clinic, with their own traditional medicines. Many people commented on social media, many comment say the traditional medicines are effective and good. (MZ)

Among Penan participants, trust in modern medicine was closely intertwined with familiarity, relationships, and communication. Women emphasized that they preferred to go to hospital or clinics for CBE and treatment.

Yes, I know about traditional healer. But we usually go to doctor at Hospital Bintulu to get medicines. (RW)

When trust was present, Penan women were more inclined to consider CBE; when absent, skepticism and avoidance were more common.

Overall, this theme underscores that trust in modern medicine is a critical determinant of screening behaviour. Trust can empower women to act on health concerns, while mistrust or uncertainty can reinforce hesitation, even when awareness of breast cancer risk is high (Mohan et al., 2021; Schliemann et al., 2022). Understanding the foundations and fragility of this trust is essential for improving access, communication, and culturally sensitive engagement in early detection services.

Theme 2: Cultural interpretations of breast cancer

This theme captures how participants made sense of breast cancer through culturally embedded worldviews that extend beyond biomedical explanations. Across communities, women interpreted illness, including cancer, not only as a physical condition but as an experience intertwined with spiritual, moral, and existential meanings. These cultural interpretations shaped how women viewed the causes of breast cancer, the likelihood of prevention, and the necessity or perceived futility of early detection. Similar patterns have been reported among rural and Indigenous women in Malaysia, where fatalism, spiritual causation, and moral interpretations of illness shape screening behaviour and help-seeking decisions (Kolahdooz et al., 2014; M. S. H. Lim et al., 2025; Moey et al., 2022; Sirili et al., 2024).

The majority of the participants were able to recognize the signs and symptoms of breast cancer. They mentioned,

Swollen and lumps. (PH)

No. If it hurts, I hold it like this. (SY)

They retrieve this information from clinics and schools.

Important for family and myself to get information and take care of our health. (RO)

The needs to go for regular early detection is vital, which expressed by all the participants in this study.

Yes. It's better for us to do examination and get treatment early to prevent the disease gets worse. (RO)

Furthermore, the importance to take immediate action as such not to be secretive or keeping to themselves once they are diagnosed with breast cancer is prominently demonstrated by the majority of the participants.

Errr…. Yes, to inform if you're sick. Do not hide the information because you might get sicker. That is all I know. (RO)

Among several women, particularly older participants, breast cancer was also associated with moral transgression, a consequence of wrongdoing or a reflection of personal or familial disharmony. These moral frameworks sometimes created feelings of shame or reluctance to discuss breast changes openly, shaping how women evaluated the need for clinical examinations.

If my children, I will make the decision. For my parents, they will decide by themselves. (MA)

Myself, husband and elders. (RT)

For Penan participants, these interpretations were further influenced by longstanding traditions rooted in communal spirituality and cultural norms around harmony, respect, and moral conduct. This worldview contributed to a perception of illness as connected to broader forces such as social, spiritual, and environmental, rather than individual health behaviours alone – patterns also described in past studies in Malaysia and Borneo (Goagoses et al., 2020; King, 2025; Kolahdooz et al., 2014; M. S. H. Lim et al., 2025).

Together, these cultural interpretations played a significant role in shaping attitudes toward early detection. They influenced how women assessed risk, attributed meaning to symptoms, and made decisions about seeking breast examinations (Gullatte et al., 2010). Understanding these belief systems is essential to recognizing why biomedical messages about screening may not resonate equally across cultural contexts and why culturally sensitive communication is critical in promoting early detection (Ashing-Giwa et al., 2006; Gullatte et al., 2010; Peek et al., 2008).

Theme 3: Fear and stigma influencing breast cancer screening behaviour

This theme highlights how participants' fears, both personal and socially reinforced shaped their perceptions of breast cancer and influenced their willingness to engage in early detection practices. Across communities, women described fear as a powerful emotional undercurrent affecting how they interpreted symptoms, how quickly they sought help, and whether they felt comfortable discussing breast-related issues with others (Peek et al., 2008).

Many participants expressed a deep sense of fatalism, viewing cancer as an inevitable and uncontrollable condition. For these women, a diagnosis was perceived as synonymous with suffering, loss, or death, diminishing motivation to seek early detection since screening was believed to merely "confirm bad news" rather than offer an opportunity for timely intervention (M. S. H. Lim et al., 2025; Peek et al., 2008; Sirili et al., 2024). Such beliefs often coexisted with emotional avoidance, where not knowing was considered less frightening than facing a possible diagnosis.

"I am scared… I am worried I might suddenly get it". (LE)

Yes. I have seen a case with breast cancer that went to hospital, but the hospital did not give treatment in time. In the end she got worse. (SE)

Because it cannot be treated like other diseases and cannot be controlled. (ML)

Stigma also played a central role in shaping fear-based responses (Sirili et al., 2024). Participants described breast cancer as a condition associated with visible changes to the body, loss of femininity, or social judgment (Moey et al., 2022). These perceptions fostered reluctance to disclose symptoms or seek support, particularly among older women and those living in tight-knit communities (Else-Quest et al., 2009; Yip et al., 2006). Some feared being pitied, gossiped about, or perceived as "ill-fated," leading to delayed conversations about breast health even with close family members.

No. Because they know it was cancer. (ML)

We will feel pity for sick people not to look down on them. (RO)

From what I have seen, feel like it is an incurable disease. But she went to Hospital Bintulu for treatment. (RS)

Yes. Friend that has passed away. That is why we would like to get checkup and screened if possible. Because we were not aware that she was sick, and she passed away abruptly, maybe there was a delay in treatment. (RA)

Beyond individual fears, concerns about social and familial repercussions emerged strongly. Women described anxiety about burdening their families emotionally, financially, or socially should they be diagnosed (M. S. H. Lim et al., 2025; Schliemann et al., 2022). In some cases, participants feared that a diagnosis could disrupt marital relations or attract subtle blame from relatives who might interpret illness as a sign of neglect, weakness, or spiritual imbalance (Solikhah et al., 2020). Previous studies have also reported that there was apprehension that a cancer diagnosis could jeopardize future marriage prospects or expose them to judgment within their social networks (Khokhar, 2012; J. N. Lim et al., 2015; Suwankhong et al., 2023; Suwankhong & Liamputtong, 2016).

Within Penan communities, these fears were reinforced by communal living structures and the value placed on social harmony. Women described a heightened sensitivity to how illness might impact the family or village, leading some to suppress concerns or rely on traditional explanations rather than seek clinical assessment. Fear of being talked about, misunderstood, or seen as a source of misfortune contributed to hesitation around breast examinations and formal medical engagement, findings similar to previous indigenous and ethnic minority population studies (Intahphuak et al., 2021; Mulikaburt et al., 2022).

Together, these fear-based perceptions created emotional and social barriers that influenced women's help-seeking behaviours (Schliemann et al., 2022; Sirili et al., 2024). Rather than a lack of awareness, many participants' hesitation stemmed from complex layers of stigma, fatalistic beliefs, and anticipated social consequences, demonstrating how emotional and relational factors play a critical role in shaping early detection practice (Moey et al., 2022).

Theme 4: Logistical refrain for seeking medical treatment and breast cancer screening

This theme captures the practical, day-to-day challenges participants faced when seeking medical attention for cancer screening, follow-up, or treatment (M. Lim et al., 2025; M. S. H. Lim et al., 2025). Across the study communities, women described a range of logistical barriers that affected not only their ability to access healthcare services but also their motivation and willingness to pursue care in the first place, consistent with previous study (M. S. H. Lim et al., 2025). These challenges were often routine, persistent, and deeply intertwined with geography, financial strain, family responsibilities, and the structure of available healthcare services.

Yes, difficult. The road condition is bad, and we have financial constraint….5-6 hours. The road condition is bad, if the weather is bad, it would take longer to arrive. (AG)

Yes. But I'm not satisfied with examination in the clinic here because the equipment is not enough. (CO)

No, it is difficult to go. We depart 6pm, will reach Bintulu by 5am the next day. When we are on our way back here, we will stay overnight in Asap, then we depart again, and we will sleep at the midway. It takes 2 nights to reach Long Rabbi. (SS)

Participants frequently highlighted distance and transportation difficulties as major obstacles. For many women, especially those in rural or remote settings, the nearest clinic or hospital required multiple hours of travel, unpredictable transport availability, or high transportation costs (M. S. H. Lim et al., 2025; Syed et al., 2013). Such logistical hurdles made even routine visits burdensome and discouraged women from attending appointments unless they perceived their symptoms as urgent (M. S. H. Lim et al., 2025).

Women also described time-related challenges, including clinic hours that conflicted with work schedules, caregiving responsibilities, and household duties (M. S. H. Lim et al., 2025; Mohan et al., 2021). Many participants expressed feelings torn between the need to attend to family obligations and the need to seek medical care, with the former often taking precedence. These competing demands contributed to delayed examinations and missed follow-up appointments, particularly when multiple visits were required (M. S. H. Lim et al., 2025).

Financial considerations emerged as another layer of logistical refrain. Although certain services were subsidized, participants noted that the cumulative costs of transportation, meals during travel, childcare, and unpaid time away from work created significant strain (Mohan et al., 2021; Schliemann et al., 2022). For some households, these costs were prohibitive, leading women to postpone screening or rely on self-assessment instead of a formal medical evaluation.

In communities with limited or irregular outreach services, women described feeling disconnected from the healthcare system, with screening perceived as something distant, complicated, or difficult to reach (M. Lim et al., 2025; M. S. H. Lim et al., 2025; Schliemann et al., 2022). Penan participants, in particular, mentioned challenges associated with travel from isolated settlements, inconsistent transport availability, and limited knowledge of clinic schedules. The lack of culturally familiar intermediaries sometimes added to the sense of uncertainty and hesitation.

Together, these logistical barriers formed a powerful refrain that shaped women's decisions about seeking cancer care (Mohan et al., 2021; Schliemann et al., 2022). Rather than reflecting a lack of awareness, participants' hesitation often emerged from the cumulative weight of practical constraints that made accessing timely medical treatment difficult, exhausting, or financially unfeasible.

Theme 5: Factors Influencing Future Willingness for Clinical Breast Examination

This section presents participants' perspectives on their future willingness to undergo clinical breast examinations (CBE), highlighting the factors that shape their intentions, motivations, and reservations. Among Penan women, discussions about future screening were closely linked to their personal experiences, perceived risk, trust in the healthcare system, and the emotional and cultural meanings they attach to breast health. Their narratives reflected a mixture of cautious optimism, lingering concerns, and evolving attitudes shaped by growing awareness and exposure to health messaging.

It was good, and they visited once last time, not sure when they will visit again. Last year they visited and provided a lot of services, medicines were given, provide massages and tooth extraction. (SY)

In my opinion, I'm satisfied with breast examination just now, because did not detect anything. So, I like people like you to come visit. (CO)

Importantly, trust in healthcare providers played a key role in shaping future intentions. Participants who felt respected, well-informed, and supported by their healthcare encounters expressed greater confidence about returning for future screenings (Mohan et al., 2021; Schliemann et al., 2022).

Yes, I wish next year there will be more doctors in Lusong to do examination so we don't have to go to Bintulu. (SY)

We would need more doctors available, treatment option and medication variety. (MZ)

This campaign is good because they share healthcare information and give medicines. (SY)

Overall, the findings indicate that while many Penan women are increasingly willing to participate in regular CBE, their future plans are still influenced by a complex mix of emotional comfort, practical feasibility, and relational trust. Understanding these factors is essential for designing interventions that not only promote awareness but also support women in overcoming the personal and structural barriers that influence their decisions about future breast health screening (Ginsburg et al., 2020; Schliemann et al., 2022).

Limitations

This study's sample consisted of women from Sarawak, the largest state in Malaysia, with diverse sociocultural backgrounds. Therefore, it was challenging to generalize the findings to a broader population.

CONCLUSION

The findings of this study highlight the complex and deeply interconnected factors that shape breast cancer detection practices among Penan women. Rather than stemming from a lack of awareness alone, challenges to early detection are rooted in a wider tapestry of cultural beliefs, social expectations, lived experiences, and structural realities that influence how women interpret breast health and decide whether to seek clinical care (M. S. H. Lim et al., 2025; Mohan et al., 2021; Schliemann et al., 2022).

Across Penan communities, illness is often understood through cultural and spiritual frameworks that emphasize balance, communal harmony, and the influence of external or ancestral forces. These interpretations affect how symptoms are perceived and when women believe medical attention is necessary. At the same time, strong modesty norms and gendered expectations shape comfort levels with clinical breast examinations, particularly in unfamiliar settings or in the presence of male healthcare providers (Kolahdooz et al., 2014; Moey et al., 2022). Trust in modern medicine emerges as a critical determinant, as women are more willing to engage in screening when they feel respected, understood, and supported by providers who communicate in ways that honour their cultural values (Ginsburg et al., 2020; Peek et al., 2008; Schliemann et al., 2022).

Fear-based perceptions, including fatalism, stigma, and concerns about disrupting family or community harmony, further influence screening decisions (Moey et al., 2022; Schliemann et al., 2022; Sirili et al., 2024). These fears operate quietly but powerfully, adding emotional weight to the already difficult decision to undergo an intimate examination (Else-Quest et al., 2009; Gullatte et al., 2010; Peek et al., 2008). For many Penan women, the fear of social consequences or the possibility of a life-changing diagnosis can overshadow knowledge about the benefits of early detection.

Compounding these cultural and emotional dimensions are the very real logistical challenges of remote living. Distance, cost, limited transportation, and inconsistent outreach services create tangible barriers that make healthcare difficult to access even when women are motivated to seek help. These structural factors reinforce delays, reduce follow-through, and deepen reliance on self-monitoring or traditional practices (M. Lim et al., 2025; M. S. H. Lim et al., 2025; Mohan et al., 2021; Schliemann et al., 2022; Syed et al., 2013).

Together, these findings demonstrate that improving breast cancer detection among Penan women requires more than increasing awareness; it demands a culturally grounded, community-focused approach that respects local belief systems, builds trust, and reduces practical barriers (Ginsburg et al., 2020; Schliemann et al., 2022). Efforts must include sustained engagement with community leaders (specifically women perceived as leaders), accessible female-led screening services, culturally adapted health communication, and outreach models that bring care closer to remote settlements.

Ultimately, the pathways to early detection among Penan communities lie in bridging biomedical practices with cultural understanding, strengthening trust between communities and healthcare providers, and ensuring that screening is physically and emotionally accessible (Ginsburg et al., 2020). By addressing cultural, emotional, and logistical dimensions collectively, early detection can become not only possible, but acceptable and meaningful within Penan women's lives.

Author Contribution Statement

Melissa Siaw Han Lim and Fitri Suraya Mohamad contributed to the conception and design of the study. Data collection and analysis were performed by Melissa Siaw Han Lim, Rekaya Vincent Balang, Keh Li Yew, and Zai Yang Yong. The first draft of the manuscript was written by Rekaya Vincent Balang and Melissa Siaw Han Lim, and all authors commented on subsequent versions of the manuscript. All authors read and approved the final manuscript.

ACKNOWLEDGEMENT

Funding statement

The authors acknowledge the Sarawak Breast Cancer Support Group (SBCSG) for supporting this project.

Ethical Approval

This study was approved by the Human Research Ethnics Committee (Non-Medical) (HREC) of Universiti Malaysia Sarawak (HREC(NM)/2023(2)/98) dated 7 July 2025.

Data Availability Statement

The dataset generated and/or analyzed during the current study are available in the [Penan Settlement Research Transcripts] repository, [https://www.kaggle.com/datasets/melissalimsiawhan/penan-settlement-research-transcripts].

Conflict of Interest

The authors declare no potential conflict of interest.

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