Should Saunas be Prescribed?

A Mixed Methods Case Study of the Impact of Community Saunas on the Well-being of Londoners

Prepared for the London Interdisciplinary School

BASc Interdisciplinary Problems and Methods

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Introduction

Saunas have long been an integral part of Finnish culture, serving not only as a place for physical relaxation but also for social bonding and mental rejuvenation (Sauna from Finland, 2023). In the UK and Ireland, sauna culture is experiencing a surge in popularity. This has led to a rise in Finnish-style public saunas, with their numbers doubling from 45 to 90 between early 2023 and 2024 and anticipated to exceed 200 by the end of 2025 (Malvern, 2024). These public saunas, commonly referred to as community saunas, are often situated outdoors and locally run, offering affordable and accessible heat therapy within shared public spaces. They foster connection and belonging while also playing an informal role in providing place-based care within their respective neighbourhoods (Outdoor Swimming Society & Pearson, 2023).

In recent years, the UK's National Health Service (NHS) has increasingly adopted social prescribing as a means of enhancing health and wellbeing through non-clinical interventions (NHS England & NHS Improvement, 2020). Social prescribing is *"a way of linking patients in primary care with sources of support within the community to help improve their health and well-being"* (Evers et al., 2024). This approach recognises that health outcomes are shaped by social, environmental, and community-based factors and that supporting patients through community engagement may simultaneously alleviate pressure on primary care services.

One promising yet under-researched area is the role of community saunas in supporting individual and collective well-being and, as such, their effectiveness as a social prescription. While sauna social prescriptions do exist, as this case study will demonstrate, evidence of their efficacy is missing from the emerging evidence base of social prescribing case studies (Social Prescribing Network, 2021). Despite anecdotal reports of various physical, mental, and social benefits, including pain management, improved mood, and a greater sense of community belonging (Instagram, 2025), there is a notable lack of academic research exploring the potential of community saunas as a public health intervention to support wellbeing, specifically in the UK context. This leaves UK-based sauna operators in a complex and precarious position, often finding ways to self-fund their prescribing programmes because of the empirical benefits they provide to the local community.

This lack of academic research is just one factor contributing to the marginalisation of saunas in health funding and policy. Local NHS trusts recognise the vast array of benefits offered by saunas (Davis, 2024). Observationally, community saunas, which sit within the third sector, align with the NHS's ambitions for a neighbourhood health model that connects individuals to services and activities which prioritise preventive care (NHS England, 2025).

This study aims to establish a foundation for addressing this gap in the literature by being the first to describe and analyse sauna bathing culture and its impacts in the UK. It achieves this by providing a case study of one community sauna, the Hackney Community Sauna Baths (2025), exploring its effects on the health and well-being of sauna bathers. It then considers how these insights could enhance Hackney's sauna prescriptions and, more broadly, inform the inclusion of community sauna bathing within social prescribing models.

Furthermore, this study lays the groundwork for future researchers aiming to design ecological studies that investigate the benefits of saunas for the UK population.

Two core questions guide the research:

1. What impact do community saunas have on the health and wellbeing of sauna bathers?
2. How might these insights inform the use of saunas in social prescriptions?

Literature review

While sauna studies have yet to establish themselves as a distinct academic discipline (Tsonis, 2016), this interdisciplinary literature review integrates perspectives from biology, neuroscience, psychology, and public health to explore the potential of saunas as a public health intervention. By synthesising research on the physiological and psychological benefits of sauna bathing with literature on social prescribing and community-driven healthcare models, this review situates the study within the broader discourse on place-based, socially integrated wellness strategies.

Traditional sauna bathing, or heat therapy[1], according to Finnish principles, is "…*a passive heat therapy characterised by exposure to a high environmental temperature for a brief period*" (Kunutsor et al., 2023). Most of the current literature on saunas primarily features positivist studies with a strong emphasis on the biomedical perspective. This research mainly focuses on the physiological effects of sauna usage, and more recently, it has also begun to investigate the psychological impacts. Additionally, a significant portion of the current literature on sauna bathing focuses primarily on Finnish or Nordic populations, where sauna culture is well-established. Thus, it's essential to acknowledge that the sauna bathing research underpinning this study is heavily contextualised and will continue to be until additional research on sauna bathing in the UK is undertaken. Researchers are tackling this issue; beginning this autumn, one study aims to guide UK sauna users on the best health and wellbeing practices (Bangor University, 2025).

Regular sauna use has been shown to provide well-documented cardiovascular benefits, including reduced hypertension, coronary artery disease, and sudden cardiac death, through improved endothelial function and blood pressure regulation (Laukkanen et al., 2015). Additional research confirms the anti-inflammatory effects, enhanced immunity, and pain relief benefits of sauna bathing, establishing it as a recognised adjunct therapy for patients with multi-morbidity (Laukkanen & Laukkanen, 2017; Brenke, 2021; Cho et al., 2019). Sauna bathing has also been shown to be a time-efficient and cost-effective health practice for individuals who, due to pre-existing chronic conditions, are unable to engage in cardiovascular exercise (Reeder et al., 2023).

Emerging research that isolates the psychological dimension of sauna shows potential in reducing depressive symptoms**,** with randomised controlled trials demonstrating improved relaxation, somatic symptoms, and appetite in patients with mild to major depression, with effects lasting up to six weeks after treatment (Reeder et al., p.6, 2023). Frequent sauna use may also significantly reduce the risk of psychosis, as evidenced by a Finnish cohort study showing a 77% lower annual risk among men who used saunas 4–7 times per week compared to once-weekly users (T. Laukkanen et al., 2018). This paper is crucial for situating UK research since it defines what is deemed regular sauna use in Finland, where a once-weekly visit is regarded as a low frequency.

Recent Japanese research demonstrates that sauna bathing enhances bodily sensory awareness and mindfulness (Jimpei, 2024), while neuroscience studies confirm that the totonou state

[1] My thanks to Earric Lee of the Sauna Research Institute, for the suggestion to adopt this mesh term to make sauna research easily accessible.

produces measurable improvements in mental relaxation, cognitive clarity, and positive emotional states (Ming Wen Chang et al., 2023)[2].

Furthermore, a systematic review synthesising the literature on the holistic impacts of traditional sauna practices is one of the few academic sources that integrate the physiological and psychological effects of saunas to present a broader picture of their impact on well-being, concluding that sufficient evidence exists to support the inclusion of sauna bathing in health strategies (Dudzik et al., 2024).

Research on saunas' social impacts remains limited, possibly due to their cultural normalisation in Nordic nations[3]. In an innovative survey targeting the global sauna community, primarily composed of respondents from Finland, the United States, and Australia, relaxation, stress relief, and detoxification were identified as primary motivations for sauna use (Hussain et al., 2019). Unsurprisingly, the researchers emphasised the need for further studies focused on the efficacy of saunas as a wellness intervention.

As discussed in the introduction, the NHS relies on social prescriptions to make wellness interventions broadly accessible; however, this model has been adopted and implemented with varying levels of success (Evers et al., 2024). Much of the literature focuses on the success of social prescriptions in two key areas: improving health and well-being outcomes and providing evidence for alleviating the burden on primary care services (Husk et al., 2019).

The social prescribing literature consistently calls for more targeted, realist-informed studies that address implementation challenges and clarify *when, how, and for whom* social prescribing interventions are effective, as well as their associated costs — before claims about their national health impact can be substantiated (Bickerdike et al., 2017). While social prescribing is conceptually promising for improving well-being by linking patients to community resources, existing evaluations lack the methodological rigour and contextual detail needed to determine its actual effectiveness or value for money (Husk et al., 2019).

A scoping review emphasised the importance of a strong theoretical foundation and measurement frameworks for social prescribing evaluations, highlighting the Social Cure grounded theory as an appropriate framework for assessing elements of group membership and social support for well-being outcomes (Evers et al., 2024). This paper prompted the researcher to explore the available instruments for evaluating social prescriptions, particularly novel prescriptions such as sauna bathing. They discovered the Measure Yourself Concerns and Wellbeing (MYCaW ®) instrument, which was licensed for this research.

One relevant mixed-methods evaluation assessed the outcomes of social prescribing for lonely patients in Hackney, London. There was a reduction in GP consultations following patient referrals to a link worker, and patients reported positive experiences. However, at the 8-month follow-up, no significant differences were found between the target and control groups in general health, depression, anxiety, or positive life engagement. The authors noted challenges with the social prescribing model and study attrition (Carnes et al., 2017).

Finally, a promising study highlights the impact of community groups in mitigating health issues related to loneliness, finding that participants with access to community groups were

[2] Researchers concluded that the totonou state is *"physical and mental relaxation, clarity of mind and happiness, and/or positive emotions"*.

[3] Julia van der Velde's upcoming research, Sauna for the People: Exploring Saunas as Social Spaces at the Oslo Badstuforening in Norway is remedying this gap.

2.65 times less likely to feel lonely than those in the control group, experiencing smaller declines in cardiovascular and cognitive health (Chopra et al., 2024). These results emphasise the power of the social cure, defined as "how a person's social relationships, networks, support, and other social identity-based resources contribute to health outcomes" (Haslam et al., 2018).

This review reveals a multifaceted and underdeveloped area of inquiry: sauna-based social prescriptions empirically offer tangible benefits, yet our understanding of *how* and *why* they work and how best to evaluate them—remains limited (Vidovic et al., 2021). While saunas are associated with both physiological and psychological benefits, the social dimensions of sauna use remain underexplored. Furthermore, while adjacent research on community-based interventions and social group dynamics highlights their potential to mitigate loneliness and other social determinants of health, these insights have yet to be fully applied to sauna contexts.

Consequently, a clear research direction is to assess the role of sauna social prescriptions in enhancing well-being, evaluated through a case study of a UK sauna, using an appropriate framework (the social cure) and evaluation instrument (MYCaW) that would establish a foundation of evidence regarding the impact of saunas as a wellness intervention.

Methodology

This research employed a complex mixed-methods design, conducted using a case-study approach, as illustrated in Figure 1 (Morse, 2009). The absence of UK-specific sauna bathing studies, particularly those employing mixed methods, has compelled the researcher to develop a novel approach, adapting several methods and analytical frameworks for this line of enquiry. Figure 1 demonstrates the intentional integration at the method level (as opposed to the results level). This research operates under a pragmatist paradigm (Hall, 2013), where the goal of this study is to generate new, robust and actionable knowledge on the impact of sauna bathing within a UK context. It aims to address a practical issue for the UK sauna research community by providing evidence that could inform broader health policy discussions.

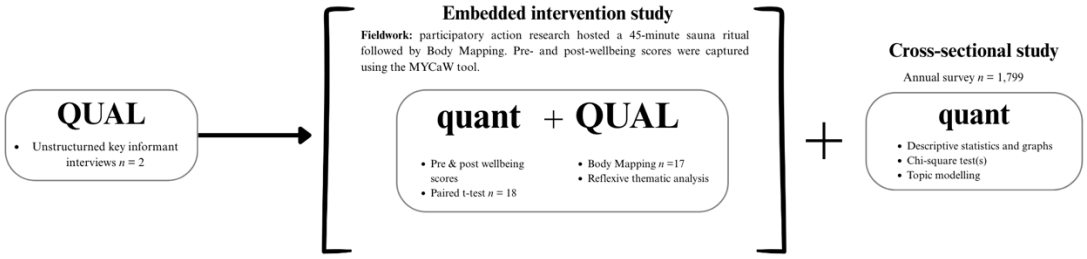


Figure 1: Image of research design following Norse notation principles.

The case-study approach was found to be the most effective strategy for conducting research in this area, primarily due to the collaboration and partnership with Community Sauna Baths (henceforth CSB), a community sauna in London with around 1,800 regular members across six locations. This setup provided an opportunity to conduct primary research in the most economical way (owing to a small budget), documenting the impacts of sauna bathing at their sites. Still, it has instrumental potential in extending the findings to other community saunas operating similarly in the UK.

The design is arguably both exploratory and explanatory, a combination that, although rare in mixed-methods research, is possible and equally valuable (Schoonenboom & Johnson, 2017). The qualitative components paved the way for this research design to come to fruition, focusing on the impacts of sauna bathing on attendees of a single Aufguss ritual, which was explored through the ethnographic method of body mapping. The quantitative methods, specifically the chi-square test of independence, examine the relationship between sauna frequency and improvements in physical and mental health. Additionally, the paired t-test assesses the significance of the immediate impact of a sauna ritual attended by n = 18. Through the integration of these methods, the researcher created a novel study that both describes and offers explanations of the effects of sauna bathing on well-being. The design itself is an asset to the sauna research community, which could replicate it.

The research commenced with an initial qualitative phase, consisting of unstructured relational interviews with key informants, conducted between November 2024 and March 2025.[4] The informants were the Community Outreach and Social Prescribing Lead and a Director at CSB. These interviews aimed to gain insight into how the sauna and its social prescription programme operate. This enabled the design of a study evaluating sauna bathing as a social prescription. The ambitious aim was to follow a cohort of socially prescribed bathers throughout their ten sauna sessions, funded by CSB.

During this period, the researcher licensed the Measure Yourself Concerns and Wellbeing (MYCaW ®) instrument, specifically designed to evaluate social prescriptions while avoiding many of the methodological weaknesses presented in the literature review of this study. Throughout the key informant interviews, it became evident that the socially prescribed bathing scope presented logistical challenges, particularly as the researcher had only six weeks to complete this phase and was concerned about attrition. Additionally, ethical concerns surfaced, specifically and perhaps unsurprisingly, that socially prescribed bathers often belonged to vulnerable groups, requiring stage two ethical approval.

Having ascertained that CSB was recognised for its sauna ritual programme, the researcher pivoted and designed an embedded intervention to explore the longitudinal impacts of a sauna ritual on well-being. This involved combining the qualitative methods of participatory action research and body mapping with quantitative measurements of pre- and post-sauna well-being scores collected using the MYCaW questionnaire.

Running concurrently with the embedded intervention, the researcher obtained an anonymised copy of CSB's annual survey, which featured 1,795 responses. This provided a cross-sectional opportunity to explore, describe, and explain the impact of the sauna on bathers' well-being using a significantly larger sample.

[4] These interviews took place while ethical approval was in progressing, both informants were made aware of this at the time and have since signed consent forms to warrant the inclusion of the knowledge gained during this time.

Qualitative methods and findings

Participants

The study was advertised through the Community Sauna Baths email newsletter, directing interested individuals to schedule a sauna session via the app. The researcher received a list of bookings and subsequently contacted each participant to share the participant information sheet (Appendix Item 4) and consent forms. Participants were offered a complimentary sauna session as an incentive for their participation, a standard offering in line with CSB's usual practice for responding to customer surveys.

Participants completed a Microsoft Form that requested their age, gender, ethnicity, health conditions, and frequency of sauna usage. The initial sample size was 33, but only 20 attended: 13 female, four male, and three non-binary. Ages ranged from 25 to 64, with the majority between 25-34. Fourteen participants reported no disabilities or long-term health conditions, four reported having them, and two preferred not to disclose. Fifteen lived in East London, two in North London, two in South London, and one in 'Other'. The sample was a mix of regular members, infrequent users and individuals representing specific sauna groups, including the free sauna for NHS workers and a local charity group.

Participatory Action Research

A 1.5-hour participatory research sauna took place on Sunday, 13th April 2025, at Hackney Community Sauna Baths. Inspired by the Sista Circles Methodology, a qualitative approach that explores the lived experiences of Black women (Stackhouse & Shannon-Baker, 2025), the researcher developed Thermal Circles. This method combines a sharing circle around a fire pit, a common feature at CSB, followed by a communal sauna aufguss, with the researcher and aufguss master participating, concluding with body mapping.

Aufguss, which is German for infusion, is "*a wellness and purification ritual hosted in a sauna by an aufguss master who wafts deliciously aromatic steam with a towel over bathers*" (O'Kelly, 2023). For context, at Hackney CSB, sauna aufguss generally involves multiple rounds of hot and cold (contrast therapy), and the inclusion of essential oils embedded into ice balls that are added to the stove. Sometimes, music, meditation, or a theatrical performance is also included.

Upon arrival, the participants were asked to sit in a circle around a fire pit (Figure 2). Each chair contained a clipboard, an A4 sheet of paper with the MYCaW question, and a blank Post-it note featuring the London Interdisciplinary School logo at the bottom. Once the group had assembled, the researcher introduced their background and established expectations for the event, ensuring that participants were reminded of their right to withdraw at any time. Participants were given an optional five minutes to use the Post-it notes to jot down their thoughts, concerns, and questions, helping them settle into the space. They rated their general well-being both before and after the sauna; more detailed information on this measurement is provided in the quantitative methods section.

Figure 2: Fieldwork photo of Thermal Circle

The sauna was maintained at a temperature between 75 and 85 degrees Celsius, with the variation accounting for the bench height chosen by a participant. The Aufguss master conducted approximately three 10-minute rounds; each round varied, with one including a group meditation, another silence, and a third featuring gentle music. Salt scrub and whisking were offered as purification tools for the bathers, and this was a communal activity where the aufguss master would offer to care for others by gently whisking them or scrubbing salt into their bodies. Between rounds, the participants exited for a rest but were under no strict instructions on how to spend this time; they could shower, take a cold plunge, rehydrate, or sit by the fire. This was an intentional choice to allow participants to mimic their everyday sauna habits.[5]

Given the unique area of research and the novelty of applying methods in this field for the very first time, the researcher participated in the aufguss to contextualise the experience and the findings. This raises an interesting question about the power dynamics at play during this phase of research, with the researcher as a 'guest' and the Community Sauna Baths, along with the aufguss master and the participants, as the 'hosts' who grant the researcher access to the space (Chakrabarti, 2024).

By being present during the sauna ritual, the researcher acquired practical information on what transpired in that space (including time, temperature, and materials used for each round) and gained embodied insight into how they and the participants may have felt during the experience. It is due to this positionality, as both a regular sauna bather and a former participant in aufguss rituals at Hackney Sauna, that they interpreted body maps with strong

[5] Thank you to Jukka Siukosarri, Finnish Ambassador to the UK who explained at the May 2025 Sauna Summit that *"in sauna, there are no rules"*. This influenced my decision as a researcher to keep the session relaxed, mimicking any other aufguss sauna at Community Baths.

blue lines running through the core as an indication of coldness that lingers from cold plunging.

Body mapping

As the sauna provides a felt, embodied experience, the researcher aimed to adopt a method that would allow bathers to express themselves in various ways beyond mere verbal or written communication, ensuring that the sensations, emotions, and feelings they experienced in their bodies during the ritual were fully captured.

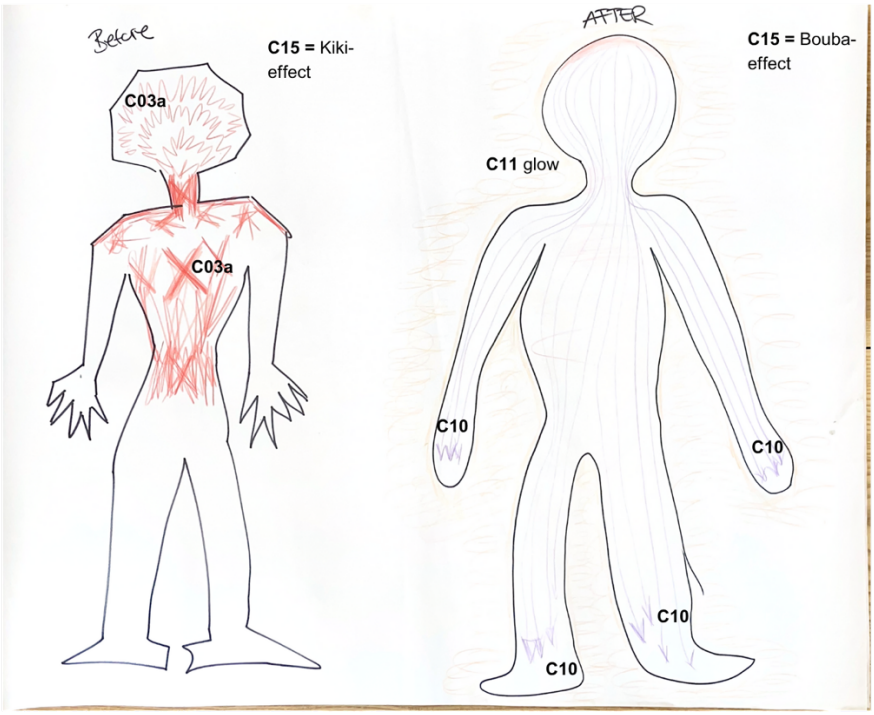
Body mapping is a relatively new ethnographic method emerging from the field of anthropology, traditionally employed to help participants reflect on the lived experiences of difficult memories or trauma-related topics (Malchiodi, 2020). This marks the first known instance of this method being applied in the context of a sauna; as such, the researcher adapted the methodology for the sauna environment. Given the shared experience of a sauna ritual, the researcher was interested in what commonalities and differences might emerge, both at the individual and collective levels. The researcher explained the academic background of this method and shared a series of optional prompts inspired by (the University of Denver, 2020) to guide participants through the process.

Considerable thought and deliberation were given to how to analyse this unique qualitative data, which encompassed both latent and semantic dimensions. The researcher adopted reflective thematic analysis, a flexible, rigorous method for health and well-being researchers when conducted within a theoretical framework (Braun & Clarke 2014). The thematic analysis is based on the researchers' grasp of phenomenology and embodiment theories (Merleau-Ponty, 1982), (Csordas, 1990). It also draws on sensory ethnography (Pink, 2015), following a constructivist epistemological stance that posits the meanings in the maps are socially and culturally constructed through the researchers' lens. An inductive approach was employed, analysing both semantic (annotations) and latent (symbols, imagery, icons, colours, shapes) data to identify patterns in both literal and symbolic readings. The researcher created overlay images to ensure traceability from their initial coding process through to the generation of themes. Eight themes emerged, as described in Table 1. The researcher has provided their body map database, which encompasses a codebook and reflexive log in Appendix Item 1. To benefit the reader, an example of a body map overlay is illustrated in Figure 3. The remaining sixteen body map images can be found in Appendix Item 2.

Table 1: Reflective Thematic Analysis Themes

Theme name	Description	Codes included
Embodied Transformation	This theme captures the way participants experienced *a holistic shift* from pre-sauna discomfort or fragmentation to post-sauna coherence, groundedness, or emotional release. Participants often depicted this transformation using *before/after contrasts*, *spiral symbols*, and written reflections on emotional, physical, or mental change. Informed by phenomenology, this theme highlights how the sauna acted as a *threshold space* where the body became the site of renewal. Through symbols like spirals and softening forms (Bouba bodies), the sauna was not only felt as a physical process but a *metaphorical shedding* of previous states of tension, stress, or emotional burden.	C01 (Ease in body), C13 (Spiral as Symbol of Embodied Transformation), C14 (Transformation annotations), C15 (Before/after contrast), C20 (Altered states)
Restoring Flow and Direction	Participants described and visually represented energy moving, flowing, or becoming unblocked — often with directional lines, arrows, spirals, or comments on "lightness" or "clearing." This theme reflects the *rebalancing of bodily and mental energy.* From a **sensory ethnographic** lens, these depictions also map the physicality of internal movement — where sensation itself (like flowing or lifting) becomes evidence of emerging wellbeing.	C10 (Energy flow), C11 (Sauna Glow), C05b (Mental ease/release), C07 (Feeling light/floating)
Sauna as a Safe Container	Several participants showed signs of emotional release through both imagery (e.g., softening, smiling) and written statements about crying, sadness, or peace. Rather than purely cathartic, these moments suggest that the sauna environment served as a safe container for emotional vulnerability. From a phenomenological perspective, participants were not merely talking about emotion — they were *feeling through it*, mapping where it resided in the body (e.g., chest, jaw), and how it shifted. This supports the idea that communal sauna practices facilitate a form of embodied care, where emotions are not suppressed but safely expressed and processed.	C03b (Emotional Discomfort), C14 (Smiling/contentment), C26 (Emotional release), C08 (Pain relief), C05a and C06b (Mental ease), C17 (Sauna Ritual as Held, Guided Space), C18 (Connection and community in the sauna), C19 (Heart Symbolism), C20 (Altered states)
Awakening the Body	This theme reflects participants' increased awareness of *hunger, tingling, taste, smell,* and other sensations post-sauna. These experiences were often accompanied by surprise, curiosity, or pleasure, suggesting a return to the body. In line with sensory ethnography, this theme underscores how well-being is not abstract, but *deeply tied to perception, touch, and interoception*. The sauna re-tuned participants' awareness to the body's needs and pleasures including	C05a (Mental ease), C09 (Heightened senses), C21 (Sensory anchoring in ritual)

	basic states like hunger and craving — reinforcing the idea of *embodied reconnection*.	
Sensory Contrasts Return the Body to Equilibrium	Participants used hot and cold colours, overlapping sketches, and expressive shading to represent bodily temperature changes. These depictions mapped *internal and external contrasts* — between cold plunges and sauna warmth, between heat held in the chest and coolness in the extremities. Rather than just temperature, this was about *feeling through contrast*, where the sharpness of cold heightened the perception of heat, and vice versa. From a phenomenological lens, this reveals how participants *lived through these contrasts.*	C11 (Sauna Glow), C16 (Hot cold overlay)
Supported Presence and Connection	Many participants described the sauna as a *relational space* — one that held, guided, or connected them to others. References to rhythm, shared breath, and caring presence point to the sauna as more than heat: it became a site of communal care. From a well-being perspective, this theme underscores the social dimension of health: well-being emerged not just within individuals, but *between* them — in moments of co-regulation, shared experience, and ritual synchrony.	C06 (Selfcare in the sauna), C17 (Held space), C18 (Community and connection), C21 (Ritual elements offer a sensory anchor) C22 (Hearts as connection symbol)
Cleansed and Refreshed Body and Mind	Some participants described sensations of being "fresh," "clean," or "reset" often expressed through light colours, central symbols (like suns or halos), or affirmations of clarity. This theme reflects the ritualised purification process of sauna: not only through sweating, but as a *symbolic clearing away* of mental or emotional clutter. Drawing on embodied well-being theory, this shows how the physical acts of heat, washing, and resting can contribute to *psychosomatic renewal* — emerging with a clearer mind and a lighter, refreshed body.	C04 (Cleansing symbolism), C02 (Satisfaction), C01 (Ease in body), C15 (Before and after depictions capture personal transformation)
Addressing Embodied Discomfort	This theme highlights the recognition, and often the *resolution*, of physical pain or dis-ease. Several maps depict pre-sauna tension (red Xs, zigzags), followed by softened or unmarked post-sauna forms. Participants didn't just notice "feeling better," but showed and described specific *body parts changing state* — such as "tender feet after salt scrub" or "shoulders relaxed." The sauna thus operates as a site for noticing the body differently, reframing discomfort as temporary, manageable, and even transformative.	C03a (Physical discomfort), C03b (Expressions of uncomfortable emotions), C08 (Noticing pain), C15 (Before and after depictions)



Codes: C03a (Expressions of physical discomfort), C10 (Energy rebalancing/ getting unstuck), C11 (Sauna Glow as Symbol of Revitalisation), C15 (Before and after depictions capture personal transformation).

Researcher memo: This body map is landscape orientation. The participant has chosen to draw a **'before' (left)** and **'AFTER'** (right) bodies, which are distinctly different. The before body resembles Kiki, and the after resembles Bouba (The bouba/kiki effect refers to the non-arbitrary association people make between certain speech sounds and visual shapes, particularly rounded shapes and spiky shapes). Large bold red crosses (X shape) and zigzag lines - using a red pencil. The outline of the body is drawn in black marker—the body outline before it has sharp, angular lines and edges, with spiky fingers and feet. The after-body outline is round and soft. The after body has faint purple pencil lines starting at the head and ending at the hands and feet. At the end of the lines are arrows pointing downwards as if depicting flow of sensations. Outside of the after-body, there are yellow pencil swirls all around the body, like a glowing halo outline.

Figure 3: Researcher overlay image of body map 17, created in Canva.

Although including a full report of the thematic analysis isn't feasible due to word limits, the researcher offers a summary of Figure 3. The participant's body map illustrates a clear transition from inner tension and fragmentation- represented by a sharp, angular body with red 'X' marks over the chest and neck and jagged zigzags in the head- to a softer, glowing, and grounded state. In this state, a yellow glow surrounds the body, with purple linear arrows pointing downward, suggesting a flowing and grounded energy. Interestingly, this resembles the Bouba-Kiki effect (Passi & Arun, 2022), despite no instructions to draw pre- and post-sauna bodies. The map has been coded with C03a, indicating physical discomfort; C10, energy balancing or getting unstuck; C11, sauna glows as a symbol of revitalisation; and C15, before-and-after depictions capture personal transformation. The sauna appears to serve as both a physical and emotional container, supporting themes of Embodied Transformation (Theme 1), Restoring Flow and Direction (Theme 2), and Addressing Embodied Discomfort (Theme 8). These themes highlight how the sauna ritual promotes not just temporary relief but a comprehensive shift in embodied, emotional, and energetic well-being.

Quantitative methods and findings

The quantitative methods of this study were conducted in separate phases, as illustrated in Figure 1. The analysis provides insights from two perspectives:

1. The immediate impact of participating in a communal sauna ritual intervention (embedded intervention)
2. A cross-sectional view on the impact of sauna bathing on the health and well-being of CSB bathers (analysis of annual survey)

Embedded Intervention

Measurements

Participants were asked to rate their well-being immediately before and after the sauna aufguss. The instrument used to measure well-being in this research was the Measure Yourself Concerns and Wellbeing (MYCaW). Each participant received a clipboard upon arrival with the question attached and was instructed to complete the front side (pre-sauna) and the back side (post-sauna). The question asked:

"How would you rate your general feeling of well-being now? (How do you feel in yourself?)".

Below the question was a six-point inverted scale, inclusive of zero (0), which represented "As good as it could be", to six, which represented "As bad as it could be" (6). Twenty participants completed the pre-sauna questionnaire, and eighteen completed the post-sauna questionnaire. Two participants added half measures onto the scale, which the instrument did not accept; these scores were rounded to the nearest whole number.

Figure 4 illustrates the proportion of collective scores (group level) before and after the well-being of the sauna ritual, alongside the mean and standard deviation for both periods.

Figure 4: Image of a histogram plot.

Figure 5 presents the pre-sauna and post-sauna well-being scores for each participant, with green lines indicating an increase in well-being scores. Given the inverted nature of the measurement scale employed, the Y-axis has been reversed for clarity. Of the 18 participants, 15 reported an increase in well-being after the sauna, while three remained unchanged, as indicated by the annotation “no change.” Evidence that almost all participants experienced a shift towards increased well-being suggests that there is an effect here.

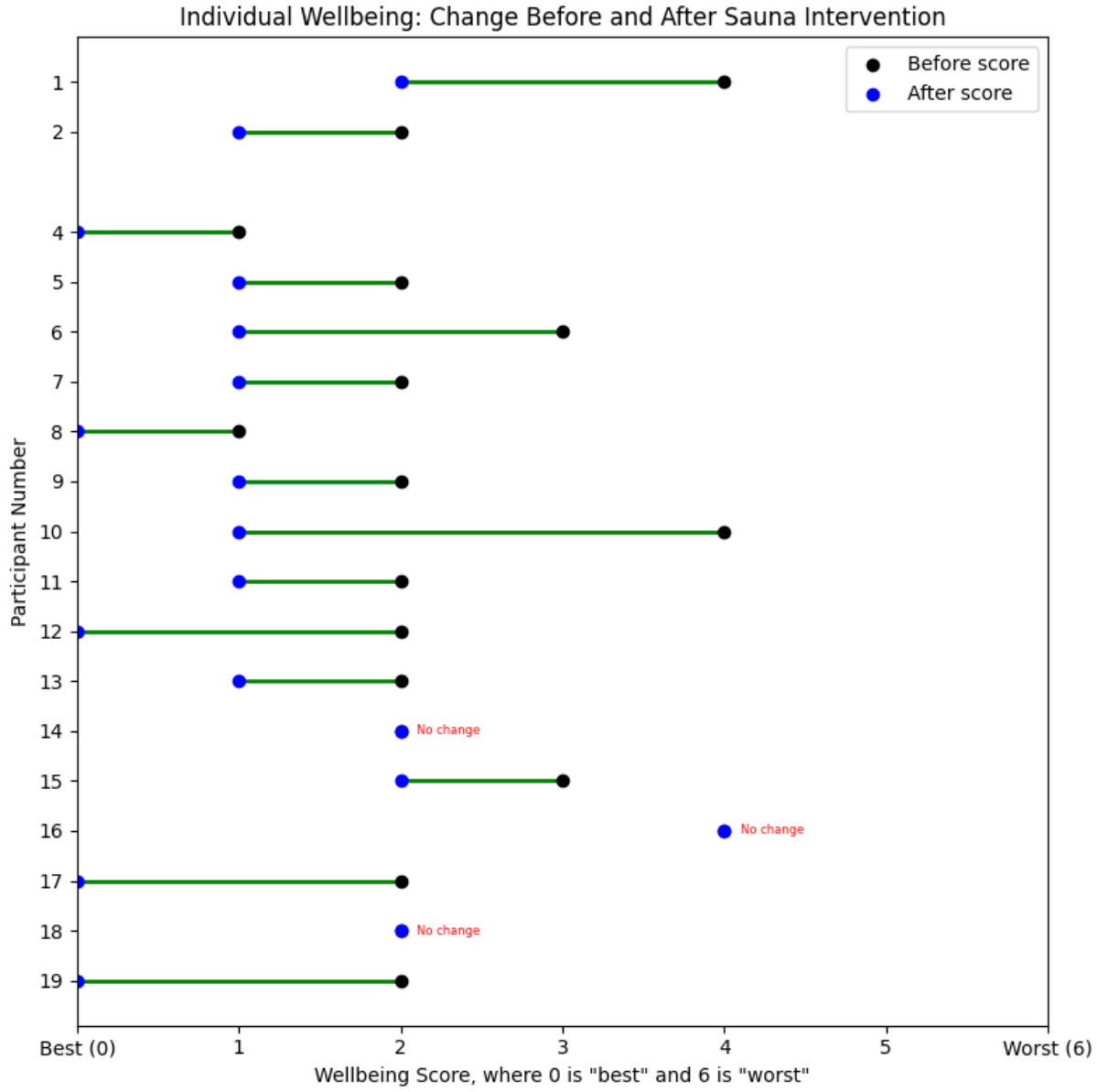


Figure 5: Image of a dumbbell plot.

Hypotheses

Hypothesis	Description	Variables
Alternative hypothesis	Participation in the sauna aufguss ritual increases self-reported wellbeing score.	Pre-sauna MYCaW score Post-sauna MYCaW score

Table 2: Hypotheses for Embedded Intervention Statistical Testing.

The researcher conducted a paired samples t-test on the pre-sauna and post-sauna scores. The findings indicate a statistically significant improvement in well-being scores after the intervention, and we can confidently reject the null hypothesis. The probability of observing a result this extreme or greater by random chance, assuming the intervention had no effect, is exceedingly small. The t-statistic indicates that this was not a random fluctuation; participants genuinely felt their well-being had increased following the intervention.

	Results
t-statistic	6.75
p-value	<0.001

Table 3: Paired T-test results.

Cross-sectional study

Exploratory Data Analysis

Simultaneously, the researcher examined the annual Community Sauna Bath Survey, which received 1,795 responses. The researcher undertook a series of methodical steps to clean and prepare the data for analysis and subsequently conducted an exploratory data enquiry by plotting several graphs and descriptive statistics to understand the distribution of bathers across various factors such as gender, age, employment status, and disability or health condition. Figures 6, 7, and 8 provide an overview of the high-level insights gained from this exploration.

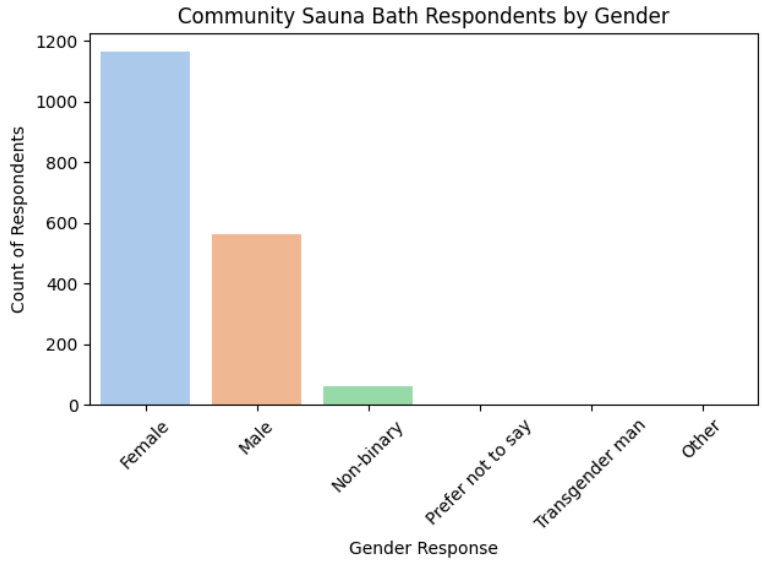


Figure 6: Plot image of respondents by Gender.

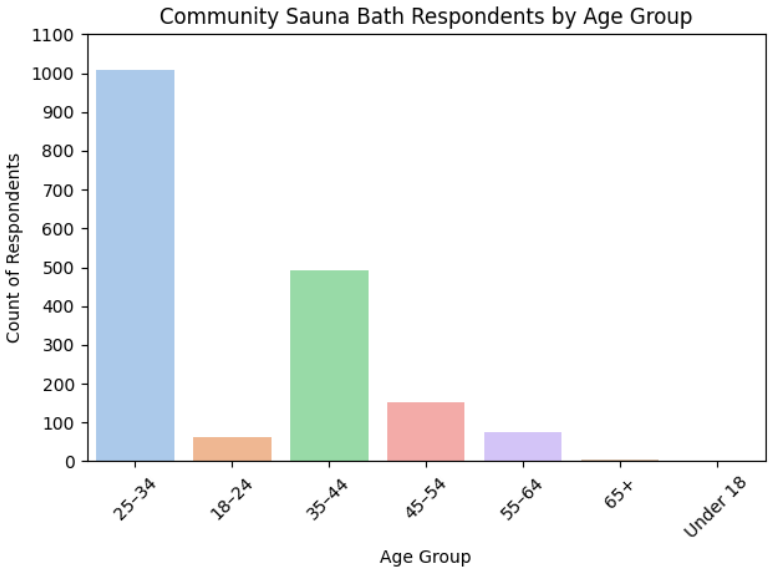


Figure 7: Plot image of respondents by Age..

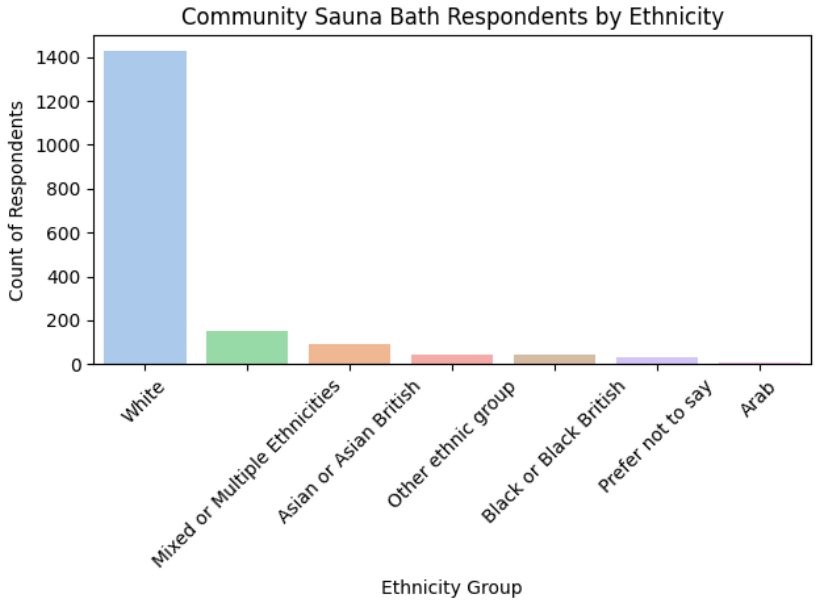


Figure 8: Plot of respondents by Ethnicity.

The frequency of sauna use, preferred location, belonging ratings (Figure 9) and the most cited reason for enjoying the community sauna (Figure 10) were also examined. During this discovery, the researcher identified the survey design generated categorical variables for questions about sauna usage frequency and whether participants had experienced improvements in their physical or mental health, presenting a challenge for statistical testing. The complete analysis is available in Appendix Item 3.

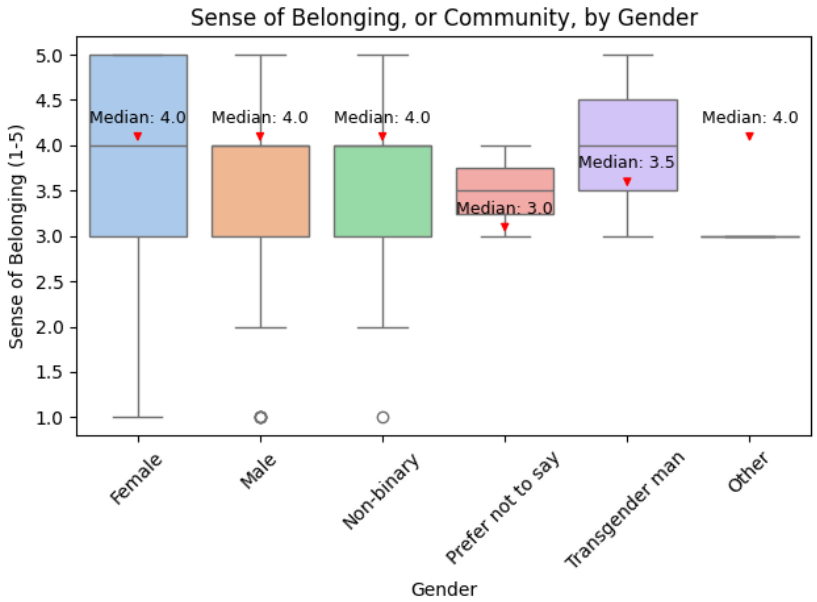


Figure 9: Plot image of belonging ratings by Gender

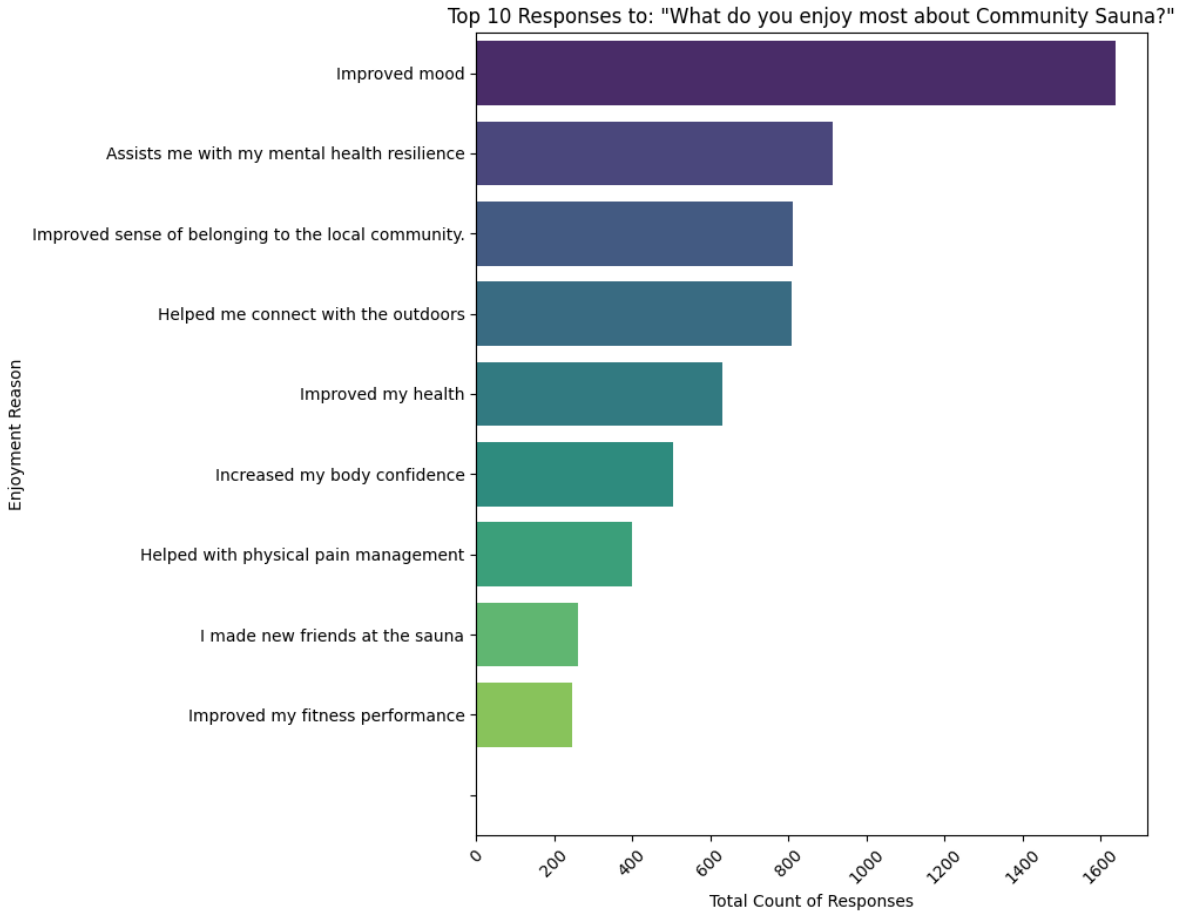


Figure 10: Image of seaborn count plot, quantifying sauna enjoyment reasons.

Statistical analysis

Initially, the researcher had hoped to produce multiple regression models that explored the relationship between sauna frequency and reported improvements in physical and mental health while accounting for covariates across gender, age, employment status, prevalence of disability or health condition, and area of London.

This would have provided insights into how saunas impact bathers across different groups, identifying which factors beyond frequency of use emerge as barriers or drivers for achieving physical and mental improvement outcomes. This tangible insight could be leveraged to enhance the existing sauna social prescribing offer of 10 funded sessions regardless of an individual's background. An attempt was made to transform the physical and mental health improvement responses into binary variables to enable logistic regression modelling. Still, with a categorical independent variable (sauna frequency), it soon became evident that the data did not meet the underlying assumptions of logistic or multinomial regression models.

Instead, a chi-square test of independence was deemed appropriate to analyse whether health improvement responses (Yes/No/Not Sure) are influenced by the reported frequency of sauna usage (Daily, Weekly, Monthly, Rarely). Moreover, the data met the necessary assumptions, including that both observed and expected frequencies in each cell were at least 5 and that the data table was not one-dimensional.

Two separate chi-square tests were conducted, with the hypotheses presented in Table 4.

Hypothesis type	Description	Categorical variables
Alternative hypothesis (physical)	There is a positive relationship between sauna frequency and physical health improvement outcomes. Knowing the value of sauna frequency *does* help predict physical health outcomes.	Sauna frequency (Daily, Weekly, Monthly, Rarely) Physical health improvement (Yes, No, Not Sure)
Alternative hypothesis (mental)	There is a relationship between sauna frequency and health improvement outcomes. Knowing the value of sauna frequency *does* help predict the mental health outcomes.	Sauna frequency (Daily, Weekly, Monthly, Rarely) Mental health improvement (Yes, No, Not Sure)

Table 4: Alternate hypothesis for chi-square tests

	Physical health improvements	Mental health improvements
Chi-square statistic	45.24	71.93
Degrees of freedom	6	6
P-value	<0.01	<0.01

Table 5: Chi-Square test results

The findings in Table 5 indicate that a statistically significant association exists between the frequency of sauna use and self-reported improvements in both physical and mental health.

The residuals in Table 6 and heat maps in Figures 11 and 12 illustrate that bathers who visit the sauna monthly or rarely are significantly less likely to report physical health improvements and substantially more likely to respond "No" or "Not sure". In contrast, Weekly users are less likely to express uncertainty and slightly more likely to report improvements in their mental health than physical health.

	Mental: No	Mental: Not sure	Mental: Yes	Physical: No	Physical: Not sure	Physical: Yes
Daily	-0.19	-0.34	0.16	-0.19	-0.34	0.16
Weekly	-1.01	-3.53	1.49	2.48	7.92	-3.44
Monthly	-1.86	-1.55	0.94	12.61	18.14	-9.16
Rarely	3.44	5.49	-2.70	12.46	15.45	-8.15

Table 6: Chi-square residuals, where positive are green and negative are red.

In summary, the data strongly supports the notion that low-frequency bathers are driving the significance of both chi-square tests, particularly by not reporting improvements in physical health and being uncertain about improvements in their mental health.

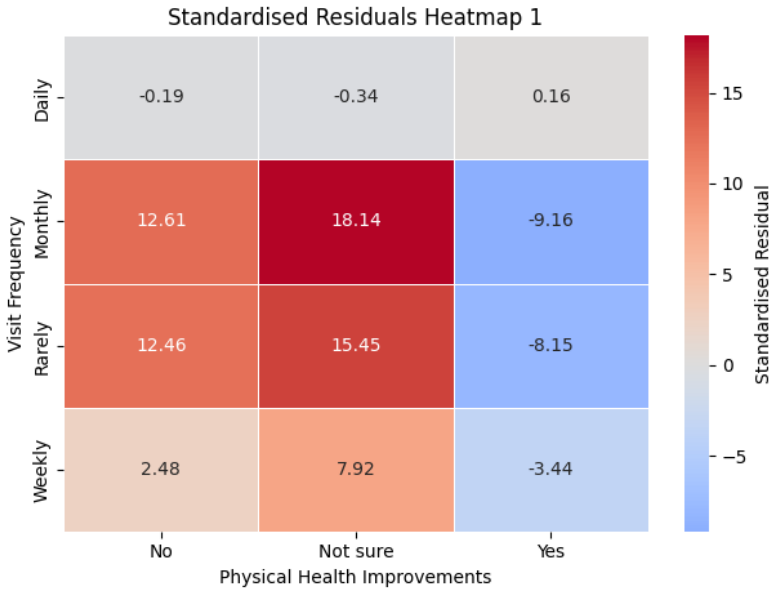


Figure 11: Heatmap of Residuals for Physical Health Improvements

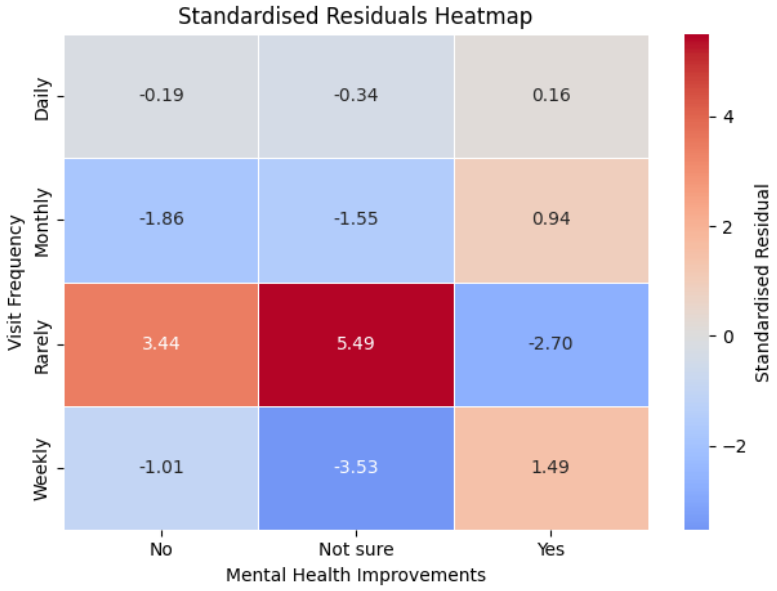


Figure 12: Heatmap of Residuals for Mental Health Improvements

Discussion

Well-being is both profoundly important and notoriously difficult to define. We can observe its effects, but direct measurement is challenging, and, at best, self-reported measures are an inference. This study focuses on measuring well-being, attempting to transform subjective reality into an objective truth that can be quantified. This issue partially arises from the absence of a universal definition of well-being (Jarden & Roache, 2023).

As such, various tools for measuring well-being, including the four measures of personal well-being, also referred to as the ONS-4 (Office for National Statistics, 2018) and the Short Warwick Edinburgh Mental Wellbeing Scale (The University of Warwick, 2025), were considered. Ultimately, the ONS-4 and SWEMWBS were discounted due to concerns about their intrusive nature, i.e., requiring participants to disclose and rate their life satisfaction, happiness, anxiety, or depression levels. This decision was deemed the most ethically appropriate for this level of research and served as intentional ethical mitigation in the research design. By employing the MYCaW questionnaire, participants were asked to rate their "general well-being", which reflects not only their own interpretation of the term and its meaning, but also circumvents intrusive or triggering aspects of enquiry.

Upon reflection the MYCaW, which had been licensed to fulfil the initial research scope of evaluating sauna social prescriptions, may not have been the most suitable option for measuring the impact of the aufguss ritual. Most notably, it quantifies well-being, though this term may be understood quite differently by each participant. Additionally, the rating scale of 0-6 — where 0 indicates good well-being and 6 signifies poor well-being—may lead to confusion due to its inverted format. It's also necessary to address what the middle values signify. The question then arises: if well-being remains undefined, and each participant has their interpretation, what exactly have we measured and detected a statistically significant shift in?

Moreover, the complete MYCaW instrument is meant to be completed interactively, prompting respondents to identify two concerns or worries and rate their level of bother, with an additional question about overall well-being. Due to time constraints, it was not feasible to administer the full instrument during a 90-minute group sauna session, representing a limitation of this study. Based on the real-world outcomes, the researcher has recommended conducting a targeted assessment using the full MYCaW instrument.

The researcher had to compromise on a thorough discussion of the body mapping methodology and findings due to word limitations. Consequently, step 6 of thematic analysis, 'writing the report', was limited to one body map for example purposes. It is crucial to highlight that this decision prevented a full report and discussion of how the social aspects of the sauna and ritual, including the liminal space, group identity, and possible presence of the social cure, might have facilitated the transformations captured in the maps. This lack of detailed exploration will be addressed in an upcoming publication with Dr. Martha Newson, which will examine the influence of sauna rituals on well-being.

The completeness of the body maps varies. According to the methodology (Jager et al., 2016), body maps must include a key, a title, and a description to be considered valid. Some maps possess all these features, whereas others do not. As the group emerged from the sauna aufguss, an informal party had started next door, serving as a distraction and creating a conflict between the zen of the immediate sauna environment and the chaos of the sound system. This reflects

the reality of conducting research in a sauna environment, which was busy and, at times, chaotic, making it challenging for the researcher to provide instructional prompts to all participants. In some respects, this serves as a functional limitation and metaphor, as sauna social prescriptions do not exist in pristine and protected spaces; they exist in the broader sauna environment, which in this context occupies a communal space that often hosts several functions simultaneously. The researcher argues that all maps, regardless of completeness, provide valuable data on how the participants might have been feeling.

Furthermore, writing in the third person rather than the first, as is widely accepted in anthropology, creates the impression that this research is objective. However, this researcher holds the view that there is no such thing as the mask of objectivity in anthropology. The primary tool in the embedded intervention study was the researcher's body as an ethnographer, which was intentional to deepen the enquiry. Their positionality and the meaning they derive from the maps, despite being grounded in theoretical frameworks, cannot be separated from themselves. As this paper is intended for an interdisciplinary audience, the author has adopted a third-person stance. However, this approach has compromised the richness of the qualitative enquiry.

Exploratory data analysis of the cross-sectional dataset revealed that most bathers visit the sauna monthly (46.9%), followed closely by those who visit rarely (27.2%), and finally by those who visit weekly (25.8%). This is important because the health benefits of regular sauna use, as reported in the literature that informed this study, are associated with a much higher frequency, in some cases up to 4-7 sauna sessions per week (Reeder et al., 2023). Thus, we can now confidently state that what is considered regular for bathers in an embedded sauna culture is not deemed regular in the UK. Consequently, the well-documented benefits of sauna may not extend to UK bathers until sauna frequency increases.

This is corroborated by the study's finding that low-frequency bathers underreported both physical and mental health improvements from visiting the sauna. In contrast, frequent bathers reported both benefits, no more than we'd usually expect (no significance).

It is worth discussing what 'weekly', 'monthly', and 'rarely' mean. The categorical nature of these responses, which are fortunately incremental, places the researcher in the position of having to 'quantitise' this data using their logic to conduct any proper analysis. The researcher assumes that weekly means less than daily but encompasses anywhere between one and six times per week. By this logic, monthly must signify visiting anywhere between 1-3 times per month; otherwise, they'd be weekly bathers and rarely would imply anywhere between 1-11 visits per year. These are the researcher's interpretations; you may disagree, which solidifies the concern that respondents may interpret these increments differently. Sauna operators should consider adjusting survey questions to gain greater granularity on sauna frequency and to ensure that the variable is continuous for future research, allowing for more accurate modelling of associations.

Conclusion

This research encompasses a mixed-method intervention and cross-sectional study examining the effects of community saunas on the well-being of bathers in London, marking the first analysis of sauna bathing data from UK participants.

Several key themes emerged from the body mapping, including Sauna as a Safe Container and Supported Presence and Connection. Coupled with the significant improvement in self-reported well-being scores ($p<0.01$), this strongly supports considering the inclusion of aufguss rituals in sauna social prescriptions and health programmes moving forward.

The cross-sectional findings indicate that most bathers are aged between 25 and 34, corroborating media reports that the sauna has become 'the new pub', with visits occurring at least once a month. The primary reasons sauna users appreciate the community sauna are an improved mood, closely followed by increased mental resilience and a stronger sense of community belonging.

Additionally, a significant association was found between the frequency of sauna use and self-reported improvements in both physical and mental health ($p < 0.01$). The findings strongly suggest that, at present, UK sauna bathers associate the sauna with a method to manage and enhance their mental health.

Lastly, whether sauna bathing confers the physiological and psychological benefits noted in existing literature for UK populations is called into question by the low frequency of sauna visits in comparison to Nordic counterparts.

In conclusion, this research provides emerging evidence that community saunas, when visited weekly, offer a distinctive health intervention, providing physical, psychological, and social benefits—a potent combination for overall well-being.

Critical limitations and future research directions

Firstly, the scope of the research design has prevented the researcher from writing up all parts of the study, resulting in the omission of several key insights, most notably the topic modelling from natural language processing. This analysis identified 18 distinct topics regarding why community saunas are important to bathers, providing actionable ways for sauna operators to tailor social prescriptions; these will be considered for publication elsewhere and are also available in Appendix Item 3.

The intervention study had a small sample size primarily driven by the sauna's maximum capacity of twenty-two bathers. Data completion rates further reduced this, as only eighteen of the twenty-two participants who engaged in the sauna Aufguss contributed complete pre- and post-scores for analysis. This study could be repeated to enhance the overall participant pool.

The samples from both the embedded intervention and cross-sectional studies are biased toward individuals who already use the sauna, which renders them non-representative of the broader population beyond current sauna users. If any phase of this study were to be replicated, including a control group of non-bathers would be advantageous.

Finally, the data from both studies provide only a snapshot of sauna impacts on wellbeing at a specific moment in time (the year 2025). An assessment of sauna effects over a prolonged period, which may reveal trends and themes, requires longitudinal data and a study design.

The immediate and obvious direction for future research is a targeted evaluation of bathers referred to Hackney Community Sauna Baths for the sauna social prescription. Using the MYCaW tool, this research aims to identify themes related to the worries and concerns addressed by the sauna prescription. This had been the researcher's original scope and is their next step in the field.

Bibliography

Bangor University. (2025). *Research to study the benefits of a sauna, as popularity rises*. Bangor University. https://www.bangor.ac.uk/news/2025-03-06-research-to-study-the-benefits-of-a-sauna-as-popularity-rises

Bickerdike, L., Booth, A., Wilson, P. M., Farley, K., & Wright, K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open*, *7*(4). https://bmjopen.bmj.com/content/7/4/e013384.abstract

Braun, V., & Clarke, V. (2014). What Can "Thematic Analysis" Offer Health and Wellbeing researchers?. *International Journal of Qualitative Studies on Health and Well-Being*, *9*(1). https://doi.org/10.3402/qhw.v9.26152

Carnes, D., Sohanpal, R., Frostick, C., Hull, S., Mathur, R., Netuveli, G., Tong, J., Hutt, P., & Bertotti, M. (2017). The impact of a social prescribing service on patients in primary care: a mixed methods evaluation. *BMC Health Services Research*, *17*(1).

Chakrabarti, D. (2024, November 12). *Discomfort as a Transformative Ethnographic Method - Anthropology News*. Anthropology News. https://www.anthropology-news.org/articles/discomfort-as-a-transformative-ethnographic-method/

Cho, E.-H., Kim, N.-H., Kim, H.-C., Yang, Y.-H., Kim, J., & Hwang, B. (2019). Dry sauna therapy is beneficial for patients with low back pain. *Anesthesia and Pain Medicine*, *14*(4), 474–479. https://doi.org/10.17085/apm.2019.14.4.474

Chopra, R. C., Chakrabarthi, S., Narayan, I., & Chakraborty, S. (2024). Efficacy of community groups as a social prescription for senior health-insights from a natural experiment during the COVID-19 lockdown. *Scientific Reports*, *14*(1), 24579. https://doi.org/10.1038/s41598-024-75262-y

Community Sauna Baths. (2025). *Community Sauna Baths*. Community Sauna Baths. https://www.community-sauna.co.uk/

Csordas, T. J. (1990). Embodiment as a Paradigm for Anthropology. *Ethos*, *18*(1), 5–47. https://doi.org/10.1525/eth.1990.18.1.02a00010

Davis, A. (2024, July 9). *Don't sweat it: 5 sauna health benefits in the hot seat*. Patient.info. https://patient.info/news-and-features/dont-sweat-it-5-sauna-health-benefits-in-the-hot-seat

Dudzik, T., Dudzik, Ł., Aleksandra Kozieł, & Igor Domański. (2024). The Impact of Sauna on Health. *Journal of Education Health and Sport*, *69*(69), 49430–49430. https://doi.org/10.12775/jehs.2024.69.49430

Evers, S., Husk, K., Napierala, H., Wendt, L., & Ansgar Gerhardus. (2024). Theories used to develop or evaluate social prescribing in studies: a scoping review. *BMC Health Services Research*, *24*(1). https://doi.org/10.1186/s12913-024-10563-6

Hall, R. (2013, January). *Mixed Methods: In search of a paradigm*. ResearchGate. https://www.researchgate.net/publication/259045135_Mixed_Methods_In_search_of_a_paradigm

Haslam, S. A., McMahon, C., Cruwys, T., Haslam, C., Jetten, J., & Steffens, N. K. (2018). Social cure, what social cure? The propensity to underestimate the importance of social factors for health. *Social Science & Medicine*, *198*(198), 14–21. https://doi.org/10.1016/j.socscimed.2017.12.020

Heinonen, I., & Laukkanen, J. A. (2018). Effects of heat and cold on health, with special reference to Finnish sauna bathing. *American Journal of Physiology. Regulatory, Integrative and Comparative Physiology*, *314*(5), R629–R638. https://doi.org/10.1152/ajpregu.00115.2017

Husk, K., Elston, J., Gradinger, F., Callaghan, L., & Asthana, S. (2019). Social prescribing: where is the evidence? *British Journal of General Practice*, *69*(678), 6–7. https://doi.org/10.3399/bjgp19X700325

Hussain, J. N., Greaves, R. F., & Cohen, M. M. (2019). A hot topic for health: Results of the Global Sauna Survey. *Complementary Therapies in Medicine*, *44*(5), 223–234. https://doi.org/10.1016/j.ctim.2019.03.012

Instagram. (2025). *Community Sauna Baths CIC on Instagram: "HAPPY SOCIAL PRESCRIBING DAY!* Instagram. https://www.instagram.com/reel/DHLW6-JRc79/

Institute of Education Sciences. (2025). *Interdisciplinarity: Problems of Teaching and Research in Universities.* Ed.gov; OECD Publications Center. https://eric.ed.gov/?id=ED061895

Jager, A. de, Boydell, K., Tewson, A., & Ludlow, B. (2016). *Embodied ways of storying the self: A systematic review of body-mapping Embodied Ways of Storying the Self: A Systematic Review of Body-Mapping*. https://openresearch.ocadu.ca/id/eprint/1206/1/Ludlow_Embodied_2016.pdf

Jarden, A., & Roache, A. (2023). What Is Wellbeing? *International Journal of Environmental Research and Public Health*, *20*(6). https://doi.org/10.3390/ijerph20065006

Jimpei Hitsuwari, Hayashi, T., Woodman Katarina, Du, M., Morita, M., Takiguchi, S., Yamashita, Y., & Nomura, M. (2024). Sauna and Mindfulness: How Sauna Bathing Affects Psychological States and Traits Related to Bodily Sensations and Emotions. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-4991388/v1

Kunutsor, S. K., & Laukkanen, J. A. (2023). Does the Combination of Finnish Sauna Bathing and Other Lifestyle Factors Confer Additional Health Benefits? A Review of the Evidence. *Mayo Clinic Proceedings*, *98*(6), 915–926. https://doi.org/10.1016/j.mayocp.2023.01.008

Laukkanen, J. A., & Laukkanen, T. (2017). Sauna bathing and systemic inflammation. *European Journal of Epidemiology*, *33*(3), 351–353. https://doi.org/10.1007/s10654-017-0335-y

Laukkanen, J. A., Laukkanen, T., & Kunutsor, S. K. (2018). Cardiovascular and Other Health Benefits of Sauna Bathing: A Review of the Evidence. *Mayo Clinic Proceedings*, *93*(8), 1111–1121. https://doi.org/10.1016/j.mayocp.2018.04.008

Laukkanen, T., Laukkanen, Jari A., & Kunutsor, Setor K. (2018). Sauna Bathing and Risk of Psychotic Disorders: A Prospective Cohort Study. *Medical Principles and Practice*, *27*(6), 562–569. https://doi.org/10.1159/000493392

Malchiodi, C. A. (2020). *Trauma and expressive arts therapy: Brain, body, and imagination in the healing process*. The Guilford Press.

Malvern, J. (2024, May 25). *Sauna craze hots up as Britons learn joy of sweat*. Thetimes.com; The Times. https://www.thetimes.com/uk/technology-uk/article/sauna-craze-hots-up-as-britons-learn-joy-of-sweat-h5q8l3rjt

Merleau-Ponty, M. (1982). *Phenomenology of Perception*. Routledge. https://doi.org/10.4324/9780203981139 (Original work published 2025)

Ming Wen Chang, Takuya Ibaraki, Yasushi Naruse, & Imamura, Y. (2023). A study on neural changes induced by sauna bathing: Neural basis of the “totonou” state. *PLOS ONE*, *18*(11), e0294137–e0294137. https://doi.org/10.1371/journal.pone.0294137

Morse, J. M. (2009). Mixing Qualitative Methods. *Qualitative Health Research*, *19*(11), 1523–1524. https://doi.org/10.1177/1049732309349360

NHS England. (2025). *NHS England» Neighbourhood health guidelines 2025/26*. England.nhs.uk. https://www.england.nhs.uk/long-read/neighbourhood-health-guidelines-2025-26/

NHS England , & NHS Improvement. (2020). *Social prescribing and community-based support summary guide* (pp. 1–31). NHS England.

O’Kelly, E. (2023). *Sauna: The Power of Deep Heat*. Wellbeck Publishing.

Office for National Statistics. (2018, September 26). *Personal well-being user guidance - Office for National Statistics*. Www.ons.gov.uk. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingsurveyuserguide

Outdoor Swimming Society, & Pearson, B. (2023, February 3). *The rise of community saunas – Outdoor Swimming Society*. Outdoor Swimming Society. https://www.outdoorswimmingsociety.com/rise-community-saunas/

Passi, A., & Arun, S. P. (2022). The Bouba–Kiki effect is predicted by sound properties but not speech properties. *Attention, Perception, & Psychophysics*. https://doi.org/10.3758/s13414-022-02619-8

Pink, S. (2015). *Doing sensory ethnography*. Sage.

Reeder, M., Anderson, T., Alumbaugh, B., & Murray, S. R. (2023). Sauna Bathing as an Alternative Adjunct Therapy in the Prevention and Treatment of Chronic Health Conditions Including Cardiovascular Disease, Neurodegenerative Disease, Metabolic Disease, and Mental Health Disorders. *Medical Research Archives*, *11*(6). https://doi.org/10.18103/mra.v11i6.3965

Sauna From Finland. (2023, July 3). *Sauna: Exploring Finland's Cultural and Wellness Tourism - Sauna from Finland*. Sauna from Finland. https://saunafromfinland.com/news/sauna-exploring-finlands-cultural-and-wellness-tourism/

Sauna Research Institute. (2024, August 8). *Mission and Goals - Sauna Research Institute*. Sauna Research Institute. https://www.saunastudies.com/mission-and-goals/

Schoonenboom, J., & Johnson, R. B. (2017). How to Construct A mixed Methods Research Design. *KZfSS Kölner Zeitschrift Für Soziologie Und Sozialpsychologie*, *69*(2), 107–131. NCBI. https://doi.org/10.1007/s11577-017-0454-1

Social Prescribing Network. (2021, November). *Recent Reports & Evaluations*. Social Prescribing Network. https://www.socialprescribingnetwork.com/resources/research-and-evaluation

Stackhouse, L., & Shannon-Baker, P. (2025). Black women who gather: exploring Sista Circles' interconnection with Black Feminist Thought. *International Journal of Qualitative Studies in Education*, 1–17. https://doi.org/10.1080/09518398.2025.2502064

Stein, K. (2023). *Bathing into Belonging: An Exploration of International Students Encounters at the Swedish Sauna* (pp. 1–76) [Thesis].

methods research. *Journal of Mixed Methods Research*, *1*(3), 207–211. https://doi.org/10.1177/1558689807302814

The University of Warwick. (2025). *WEMWBS*. Warwick.ac.uk. https://warwick.ac.uk/services/innovations/wemwbs

Tsonis, J. (2016). Sauna Studies as an Academic Field: A New Agenda for International Research. *Literature & Aesthetics*, *Vol. 26*, 41–82. https://researchdirect.westernsydney.edu.au/islandora/object/uws:40083

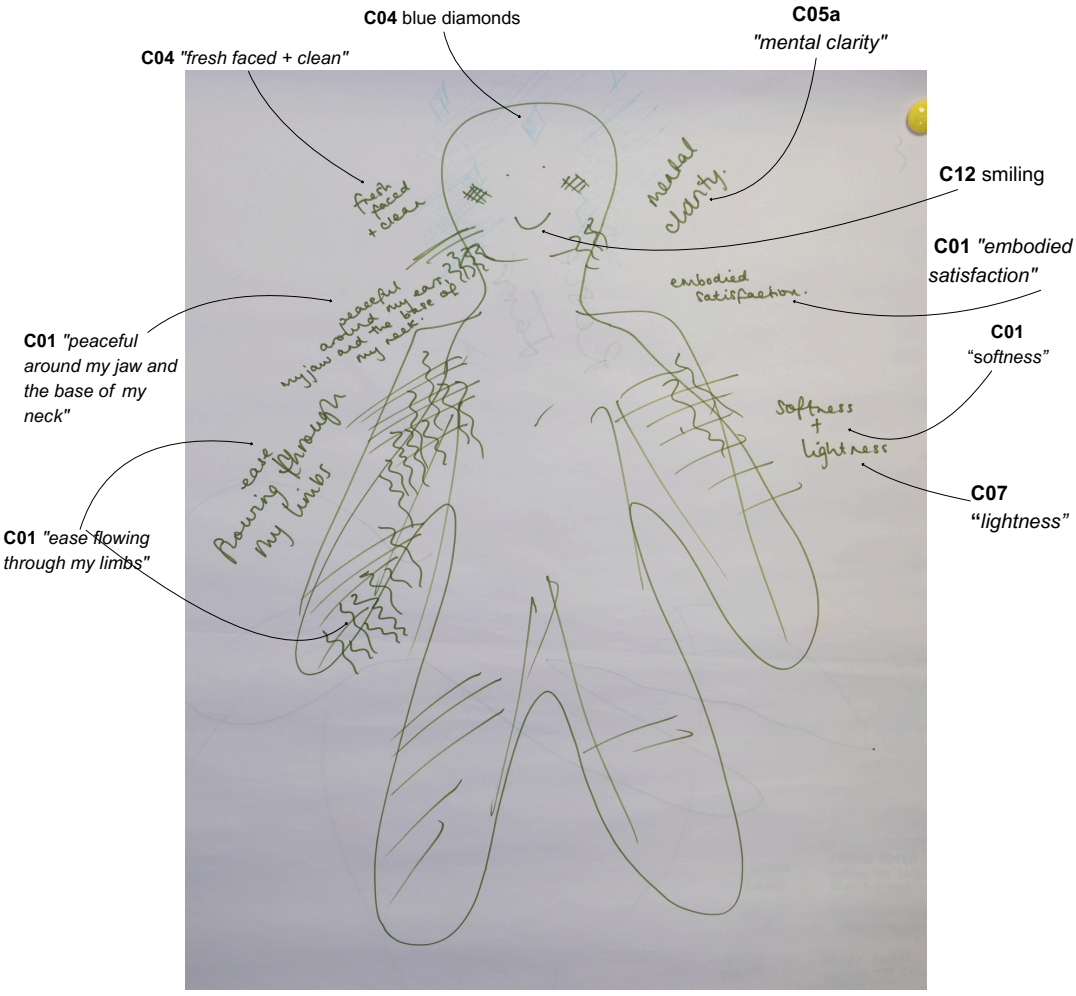
University of Denver. (2020). *Body Mapping Resource Page | University of Denver*. University of Denver. https://www.du.edu/4D-experience/resources/body-mapping

Vidovic, D., Reinhardt, G. Y., & Hammerton, C. (2021). Can Social Prescribing Foster Individual and Community Well-Being? A Systematic Review of the Evidence. *International Journal of Environmental Research and Public Health*, *18*(10), 5276. https://doi.org/10.3390/ijerph18105276

Appendix Item 1: Reflective Thematic Analysis Codebook

Code ID	Code Name	Type	Description of Code	Map Examples (ID + Description)	Initial Themes	Notes / Reflexivity
C01	Ease in body	Semantic	Participant describes or depicts physical ease in their body. Possibly linked to the release of Serotonin, stimulated by heat, leading to feelings of safety, ease, and letting go.	M1 – wavy lines + "ease flowing", M5 "loose muscles" annotation next to wavy springs on the shoulders and lower legs;	Ease	Common in post-sauna depictions
C02	Satisfaction	Semantic	Text directly stating satisfaction felt in the mind / body	M5 "sleepy - looking forward to how well I'll sleep tonight"	Whole-Body rejuveniation	Unusual specificity in language
C03a	Expressions of physical discomfort	Latent	Visual expression of tension, tightness, or discomfort often depicted through harsh, angular, sharp lines, bold blocks, crosses and in dark colours (kiki effect style)	M18 shaded red blocks on top of each shoulder; M12 "awareness of tenderness in my feet after salt scrub" M7 "the plunges are enjoyable, but cold feet are uncomfortable" M9 "my eyes feel a bit sore + sensitive" M17 Large bold red crosses (X shape) and zigzag lines - using a red pencil	Addressing physical ailments	How to differentiate between pre-sauna discomfort and post sauna discomfort?
C03b	Expressions of uncomfortable emotions	Semantic	Descriptions of pre-sauna discomfort and post-sauna tenderness.	M12 "had a moment of registering a feeling of tiredness + sadness ? A need to rest and cry" M4 "overwhelm" "dread" M9 and "tenderness in my chest thinking about my mom"	Sauna as Release	
C04	Feeling clean / refreshed	Latent	Depictions of "fresh," "clean," or symbols of renewal	M1 "fresh-faced and clean" annotation M13 "cleansing nose from cold sensation" annotation and blue shading under nose P8 spiraling symbol appearing above head accompanied by the annotation "fresh" and a the head depicted as spiraling	Cleansed Body	Explore links to cultural/spiritual motifs
C05a	Mental ease	Semantic	Annotations referencing clarity and absence of thoughts, suggesting participants dropped into their bodies out of their thinking mind	M1 - annotation right of head; M5 annotation "absence of intrusive thoughts"; "no cares or worries" M2 "emptiness" annotation right side of head, M4 "clear"	Sauna as Release	
C05b	Mental ease	Latent	Visual expression of mental clarity, freeflowing thinking, ideas	M18 bulb figure in the head, and then emerging rays or lines, suggest thinking, clarity, or ideas. M6 The head features a single continuous green swirl symbol, suggesting that it represents thoughts or sensations flowing.	Sauna as Release	
C06	Self care in the sauna	Semantic	Participant describes body parts as soft, tender, or at ease after whisking and using salt scrub.	M1 - annotation right of arm; M9 "soft back/ shoulder blades" "soft legs"	Community, Care, and Shared Ritual	Links to the salt scrubs perhaps?
C07	Feeling light/Floating	Mixed	Expressions of feeling lighter or floating.	P8 spiraling symbol appearing five times accompanied by the annotation "lighter" or "feeling lighter"; M4 annotation "light headed in a good way"; M2 waving body M5 "light and floaty" M6 68 arrows of varying sizes and colours (yellow, green, blue, dark brown) in two rows, stacked on top of one another, protruding from the arms and pointing upwards towards the head.	Weight Lifted / Energetic Lightness	
C08	Reporting pain	Semantic	Text directly stating pain relief and/or accompanied by colour shading in body regions where relief is felt	M13 - "feeling better during the sauna from body pain" annotation in key; M4 annotation "no back or shoulder pain"	Pain relief	
C09	Heightened sensory awareness	Semantic	Expressions of heightened bodily awareness, especially hunger, taste, tingling, or craving. May reflect post-sauna "re-entry" into sensory life. Includes direct annotations ("Hungry!") visual cues (spirals, wavy lines) in the stomach region, and cues for tingling (flecks/spots)	M13 - "sometimes after the sauna I feel itchiness in both my hands" accompanied by blue shading; M9 - annotation below arms "tingley arms", "prickley fingers", annotation below fingers, M12 "scalp tingles" M5 "Feed me!" text on the drawing of a stomach; M5 "Hungry!" annotation; M12 "HUNGRY" with green rings in the stomach area M3 collection of wavy lines look like they are rumbling; M2 green patch of criss crossed lines over stomach region, M8 green lines flashing outwards from central spiral at the stomach position	Awakening the body	
C10	Energy rebalancing/ getting unstuck	Mixed	Visual expression of flowing movement or release across body, possibly linked to the release of Serotonin stimulated by heat.	M6 – arrows down in before, arrows up in after; M9 arrows down; M1 20 wavy lines along arms M6 68 arrows of varying sizes and colours (yellow, green, blue, dark brown) in two rows, stacked on top of one another, protruding from the arms and pointing upwards towards the head. M11 "balanced" x6 M17 faint purple pencil lines starting at the head and ending at the hands and feet	Energetic realignment	Check how frequently this appears
C11	Sauna Glow as Symbol of Revitalisation	Latent	Visual metaphors (e.g. sun, rays, and halos) suggest warmth, energy, or revitalisation. Warm shading (red, orange, yellow, purple) used to communicate lingering warmth in the body. Often placed centrally on the body, or in the head to suggest holistic impact.	M7 – sun with rays superimposed on torso; M14 – windmill/sun at center of chest. M5 rays emerge from and go through the head M7 "sunny bright sauna glow" M16 yellow shading on the top of the head M17 yellow pencil swirls all around the body M13, M15, M16 top half of the body, the abdominals, chest, shoulders, neck, and head; there are more of them at and around the head; red and yellow shading is across the centre of the chest red shading indicates where warmth is felt	Embodied Warmth and Radiance	Suggests transformation through warmth. Could be coded with "glow," "light," or "solar" symbolism. Explore cultural/spiritual symbolism of sun. Could develop a sub-code if glow appears diffeerntly in other maps (e.g. aura vs internal warmth).
C12	Smiling conveys contentment	Latent	Smiling facial features interpreted as symbols of post-sauna contentment, emotional release, or satisfaction. Smiles often appear in conjunction with softness or glowing bodies.	M1, M2, M4, M9, M12, M13, M15 – smiling mouths drawn after sauna session.	Emotional Ease	
C13	Spiral as Symbol of Personal Transformation	Latent	Use of spiral imagery across body maps symbolising a personal or energetic transformation. Often located in the head, chest, or stomach — these may represent cyclical movement, internal change, or flow. Commonly associated with softness, introspection, or post-sauna peace.	M8 spirals in the head, chest, and stomach; M2 spiral on left arm; M18 spiral in the chest; M6 spiral in the head; M3 spirals for eyes;	States of Transformation	
C14	Linguistic expressions of transformations	Semantic	Descriptions of experiencing a shift from a pre-sauna to a post-sauna state	M4 transformation from being "overwhelmed to trusting and from experiencing dread to finding clarity", M6 POST SAUNA " with the annotation "WARM + FRESH + REFRESHED + GROUNDED"	States of Transformation	
C15	Before and after depictions capture personal transformation	Latent	Before and after body maps that show a clear transition from "Kiki" to "Bouba" in how the participant depicts themselves.	M6 Kiki before, Bouba after M17 Kiki before, Bouba After M10 "I started the sauna session feeling quite tired & stressed from the week, the heat, smells, sounds, breathing & energy of the space really helped me relax & melt away my stress & replacing it with this beautiful calm feeling which I've expressed here by using a mix of soft colours",	Liminal space invokes transformation	
C16	Temperature contrasts	Latent	Maps which superimpose warm and cool sketches of the body to express the inner and outer sensations. Connected lines of blue and green consistently appear inside the body, whereas shades of red, orange, and pink appear as the outer body.	M18, M3 The body is drawn in pink with blue colours used at the feet and shoulders in a bubble-like pattern. M15, M18 connected blue lines down each arm and each leg, thick blue line starting at the mouth and travelling down the middle of the body, ending at the stomach or thereabouts M8 blue swirls and shading with dashed lines that break it up, almost suggesting coldness as it enters, leaves, or lingers on the body. M9 There are blue lines on the feet, accompanied by the text "My feet are cold." M16 blue half-moons are on the knees; the blue lines are down the arms, into the hands and fingers	Sensory Contrasts (Heat and Cold)	
C17	Sauna as Held, Guided Space	Semantic	Expressions of gratitude for the facilitation of a guided sauna, external containment offers an opportunity for internal release.	M7 "time passing but not having to worry as it's a guided experience - comfort" M7 " "positive atmosphere from sharing space/experience" M11 "an experience that allowed me to understand flow and presence I had no choice but to respect the rhythm of breathing which allowed me to take in the essence of "right now" M10 the heat, smells, sounds, breathing & energy of the space really helped me relax & melt away my stress & replacing it with this beautiful calm feeling	Supported Surrender	
C18	Connection and community in the sauna	Semantic	Expressions of feeling connected to others, the space, nature through terms like "we", noting the atmosphere and reflecting positively on the sauna Aufguss.	M8 "Community + Care" M7 "positive atmosphere from sharing space/experience"	Community, Care, and Shared Ritual	
C19	Heart Symbolism	Latent	Drawings of hearts in various sizes, often in the chest area, possibly representing connection or emotional openness. Experiencing "love" through the hormonal release of oxcytocin.	M11 There is a huge bright red heart that takes up all of the inside space of the body, from the top of the shoulders down to the pelvis. M4 centre of the chest is a heart shape that is intertwined with an arrow M2 heart symbol is in the place of our hearts.	Heart-centred Experience	
C20	Altered states	Mixed	Descriptions or visualisations of reaching a trance-like states	M11 body is a thick, black outline composed of continuous, zigzag-like strokes M3 "I feel like an alien in a good but weird way"	Bodymind Shift	
C21	Ritual elements offer a sensory anchor	Both	Descriptions or visualisations of the sensory elements in the sauna, such as, the whisking leaves, essential oils, salt scrub, music, dates	M7 "touch + smell of the leaves", M7 "smell + connection + nature", M7 At the head, there is a green oval "halo" M9 "nice sweet taste from dates"	Sensory Ritual	
C22	Emotional release	Semantic	Descriptions of emotions being released, either triggered by the sauna experience, or the sauna as a container / vehicle for the release.	M12 "had a moment of registering a feeling of tiredness + sadness ? A need to rest and cry" M4 "overwhelm" "dread"	Letting go/emotional cleansing	

Appendix Item 2: Body Map Overlays



Codes: C01 (Ease in the body), C04 (Cleaning symbolism), C05a (Mental ease), C07 Feeling light/floating, C12 (Smiling)

Researcher memo: A portrait gingerbread man-style body - soft and bouba-like. It has several annotations describing how they feel. There are 20 wavy lines over the left arm and horizontal straight lines over them, next to the words "ease flowing through my limbs". On the right, there are much fewer wavy lines and straight lines next to the annotation "softness + lightness". Around the head, there are blue sketching and diamond shapes in a sort of connected diamond criss-cross pattern. There is a diamond-shaped mark on the forehead. This is next to blue text that describes the feeling of being fresh-faced and clean. The body has a mouth which is smiling.

Appendix Item 3: Jupyter Notebook

Link to GitHub repository, where data is available on request:
https://github.com/RachaelJadeMcGrath/Capstone

In [1]:
```
# importing liabraries for analysis
import pandas as pd
import numpy as np
import scipy.stats as stats
import matplotlib.pyplot as plt
import seaborn as sns

# setting pandas safe option
pd.set_option('mode.copy_on_write', True)
```

Should Doctors be Prescribing Saunas?

This notebook contains analysis on two distinct data sets, one intervention data set, and the other cross-sectional data set:

- The first dataset is an anonymised copy of Community Sauna Baths Annual Survey in 2024. It contains 1,799 responses.
- The second dataset was collected by the researcher during their research with Community Sauna Baths, and, contains 18 valid pre-sauna and post-sauna wellbeing scores using the Measure Yourself Concerns and Wellbeing MYCaW instrument.

The Cross-sectional study

Step 1: Data Cleaning

We begin with the larger data set and explore what cleaning is required.

In [2]:
```
# Load the dataset from a CSV file
sauna_2025 = pd.read_csv("Anonymised Community Sauna Annual 2024 Survey (
print("Shape: ",sauna_2025.shape)
```

```
Shape:  (1799, 35)
```

In [3]:
```
# checking for missing values
sauna_2025.isnull().sum()
```

Appendix Item 4: Participant Information Sheet

THE LONDON INTERDISCIPLINARY SCHOOL

Participant Information Sheet

Title of Study: An Exploration of the Impact of Community Saunas on Wellbeing.

We want to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is unclear or if you want more information. Take time to decide whether to take part.

WHO WE ARE AND WHAT THIS STUDY IS ABOUT

My name is Rachael McGrath, and I am a final-year student at the London Interdisciplinary School. I'm passionate about preventative healthcare and community-based health interventions. This research study explores the impact of community saunas and sauna rituals on the well-being of sauna bathers.

WHAT WILL TAKING PART INVOLVE?

You will be invited to participate in a 90-minute session at the Hackney Wick Community Sauna on Sunday, 13th April. The session will include a traditional Aufguss ritual hosted by Community Sauna Baths. During the rest period, you will be involved in a body mapping activity, which will take approximately 10-15 minutes and will occur during a rest period. You'll draw, colour, and label your own body representation to express how the sauna experience impacted your physical and emotional well-being. This guided activity will be fully facilitated with clear prompts to support you.

You may also be asked to complete a well-being questionnaire that takes approximately 10-15 minutes before and after the session. The timing and instructions for this questionnaire will be communicated closer to the event date. With your permission, parts of the session may be recorded in audio and video, and images may be captured for both content and research purposes.

Lastly, we may ask you to participate in an informal interview about your sauna experience.

The entire experience is designed to be enjoyable with a focus on co-creation and seamlessly integrated with your sauna experience.

WHY HAVE YOU BEEN INVITED TO TAKE PART?

You have been invited to participate because you are over 18, have no major health conditions, and have responded to the Community Sauna Baths newsletter advertising a Research Sauna.

EXPENSES AND PAYMENTS

The sauna session is free to attend. As compensation for your participation, Community Sauna Baths will offer you an additional free sauna session to redeem at a later date. Please expect instructions from Community Sauna Baths on how to claim your free session.

DO YOU HAVE TO TAKE PART?

Participation is completely voluntary, and you have the right to refuse participation, refuse any question or withdraw at any time without any consequence whatsoever.

Version: 042024

AI statement

This research employed the free versions of ChatGPT and Claude for initial problem scoping and identification of academic articles. It also utilised Google Notebook LM to elucidate the academic articles referenced in this study's literature review. Finally, it employed Grammarly AI to check spelling and grammar, as well as to provide suggestions for enhancing clarity and coherence. I declare that this submission is my own original work and that any AI-generated text or images have been fully cited as such.