Where do you stand? An exploration of perspectives toward feet, foot health, and footwear using innovative digital methods

Sue Skidmore (✉ s.skidmore@edu.salford.ac.uk)

University of Salford School of Health and Society   https://orcid.org/0000-0003-4720-6893

Yeliz Prior

University of Salford School of Health and Society

Christopher Nester

Keele University

Sam Bird

University of Salford School of Health and Society

Cristina Vasilica

University of Salford School of Health and Society

Abstract

Background

The cost of losing foot health is significant to the person, healthcare systems, and economy, with diabetes related foot health issues alone costing over £1 billion annually in the UK. Yet many foot health problems are preventable through alternative health behaviour. It is therefore important to understand how feet, foot health and footwear are conceptualised to gain understanding about how these might influence foot health behaviour and inform health messages that seek to protect or improve foot health through altered health behaviour. This research seeks to explore attitudes and beliefs and identify phenomena that may act as barriers or motivators to the proactive self-management of foot health,

Methods

Public conversations involving 2,699 expressions related to feet, footwear or foot health on Facebook, Twitter, and Instagram were extracted. Conversations on Facebook and Twitter were scraped with NVivo's NCapture plugin whereby data is extracted and downloaded to NVivo. Extracted files were uploaded to the Big Content Machine (software developed at the University of Salford) which facilitated the search for keywords 'foot', 'feet', 'footwear', 'shoe', and 'shoes'. Instagram was scraped by hand. Data was analysed using a Thematic Analysis approach.

Results

Three themes were identified; 1) connections and disconnections derived from social and cultural constructs, 2) phenomena beyond attitudes and beliefs that relate to symbolic representations and the impact when foot health is lost, and 3) phenomena relating to SoMe as a conduit for the exploration of attitudes and beliefs.

Conclusions

This novel research exemplifies complex and sometimes incongruous perspectives about feet including their value for what they facilitate, contrasted with negative feelings about the negative impact that can have aesthetically when feet work hard. Sometimes feet were devalued, with expressions of disgust, disconnection, and ridicule. The importance of contextual, social, and cultural phenomena with implications for optimising foot health messages. Knowledge gaps including factors related to children's foot health and development, and how to treat foot health problems. The power of communities with shared experience to influence decisions, theories, and behaviour about foot health was also revealed. While people do talk about feet in some social contexts, it is not always in a way that promotes overt, positive foot health behaviour. Finally, this research demonstrates the benefit of exploring perspectives in uncontrived settings and illuminates the potential utility of SoMe as a vehicle to promote foot health self-management behaviour that is responsive to the social and demographic variances of engagers who inhabit those spaces.

Background

The need to engage in positive foot health behaviour is significant. The burden of impaired foot health is high[1] with diabetes related foot health issues alone costing over £1 billion annually in the UK. Need for care will out-pace the sustainability of the healthcare system[2] and yet many foot health problems are preventable through alternative health behaviour. The impact when foot health is lost includes diminished quality of life[3] risk of falls[4] impaired mental health [5, 6], diminished social, and physical well-being [6], capacity to work, and relationships with others [7]. When foot

health is compromised to the extent that it places the foot at increased risk of amputation, for example following diabetic foot ulceration (8), this leads to mortality rates comparable to cancer (9).

Observable judgments in the form of attitudes(10) and the beliefs that inform them(11) are understood to have a direct impact upon health-related behaviour (12), and successfully changing health behaviour can be difficult (13). Therefore, understanding attitudes and beliefs is a central tenet of overcoming barriers to behaviour change (14). Attitudes and beliefs about feet, footwear (15), and foot health(16) are understood to be influenced by constructs outside of health-related parameters such as self-identity, workplace status and wider societal phenomena (17). However, attitudes and beliefs are also malleable (17). Therefore, understanding what resonates is central to informing foot health policy and practice level strategies and addressing the associated significant healthcare burden, where prevention is preferable to cure (18). This would be consistent with contemporaneous policy that places health ownership on the individual, encouraging self-management (19–21).

Prevention is not just about slowing down or stopping progression to the next stage of ill health, but also proactively engaging in strategies to prevent foot health problems before they arise. Therefore, research need not limit the identification of attitudes and beliefs to a specifically defined clinical cohort such as those with a chronic illness or occupation that places the foot at risk. Instead, it is important to illuminate phenomenon that may be important to inform a true person-centred approach that acknowledges the importance of respecting factors specific to the individual that might influence care (22). Understanding this, one approach to investigating attitudes and beliefs is to use heterogenous data sources to ensure any exploration embraces a wide range of perspectives. SoMe has been shown to meet this criterion, providing accessible, ubiquitous, and authentic data, that illuminates opinions, attitudes, beliefs, opinions, expressed in the public arena (23). Data scraping is a digital research method that lends itself to understanding cultural phenomenon (24), lived experience (24), behaviour (25), attitudes and beliefs (26), self-expression, self-documentation, information sharing, and social interaction (27). It provides an opportunity to efficiently explore concepts (28), from 'big data', across a heterogenous sample where up to 95% of digital content is an unstructured (29) sharing of private thoughts in public domains (30). This provides a unique platform through which to meet our aim to explore perspectives toward foot health and identify phenomena that may act as barriers or motivators to proactively self-managing foot health.

Facebook, Twitter, and Instagram are the three most popular social networks accessed in the UK (31) where unstructured text communication is central. Exploring the 3 platforms affords a spread across demographic groups such as different socio-economic groups and age ranges for example where Facebook engagers tend to be older (32) than those of Instagram, where 95% of those aged 18–24 are active on social media (33). This cross-platform approach lends itself to diversity (34), and improves inclusivity (35). Finally, by utilising data that has been observed in a natural social space, this removes the potential for an interviewer/participant dynamic that can bias the results during interviews (36).

Methods

Data scraping SoMe is a novel approach and as such there are several terms of reference that may not be familiar. Clarification of these terms is provided in Table 1.

Table 1
Clarification of terms

Terms	Explanation
SoMe	Shortened version of social media
Tweets	Character limited expressions posted on Twitter (280 characters)
Posts	Expressions and messages posted in online social media environments
Data scraping	A digital method that involves the extraction of large datasets in a format that facilitates analysis
Big data	Heterogeneous, large, and complex datasets, that derive from many sources that gives opportunity for the exploration of phenomenon
Unstructured text	Freeform text that does not have a predefined format, examples include e-mails, presentations, word documents
NCapture	Web-browser extension that enables web content to be gathered and imported into NVivo (qualitative data analysis software), as PDF files
Big Content Machine	Bespoke software developed at the University of Salford that facilitates searches for keywords from big data sets

Ethics

Ethical approval gained from the University of Salford (HSR 1819 – 106). Ethical principles relating to data scraping outlined by the Association of Internet Researchers were adopted. Gaining informed consent when utilising 'big data' is not always feasible or meaningful if data is cleaned of personally identifiable information (37), where it is aggregated such that no comments or quotes are directly reproduced (38), and where data has been collected from multiple and diverse platforms.

GDPR regulations highlight that where research activity is both in the public interest and conducted by legitimate research agents (39), research occupies a position of privilege, if the process safeguards anonymity (30). These principles were applied to the data scraping methods of this research. To mitigate the risks and ensure full anonymity of data and participants, this research does not include individual quotations (posts, comments, tweets, or any type of data).

Initial search framework

An iterative and exploratory hand search of Facebook, Twitter, and Instagram was undertaken to establish the utility of this research method and embellish the search strategy that was informed by a prior literature review and clinical experience. Additional information is provided in relation to the search sectors (additional information 1) and search terms (additional information 2). Both '@' and '#' prefixes were searched on Instagram and Twitter due to the potential to render search results.

Platform and search process

Data from Facebook and Twitter were scraped utilising the NVivo NCapture web extension to download data from specified Facebook pages and Twitter search results. A manual search and extraction were performed on Instagram. Following a manual exploration of all 3 platforms, several interest areas where expressions were evident about feet, foot health and footwear were identified (see Additional File 1). Each platform has its own microenvironment and therefore the search terms for each platform differed. Details of platform specific search terms is provided in Additional File 2.

The extracted dataset was imported into excel spreadsheets for qualitative analysis. The data was searched for keywords 'feet', 'foot', 'footwear', 'shoe', and 'shoes utilising the Big Content Machine (BCM), a bespoke data search tool developed at the University of Salford that facilitates keyword searches within large datasets. The number of expressions from Facebook and Twitter is provided in Table 2. The first 20 Instagram stories were identified and analysed by hand for expressions including the keywords.

Table 2
Expressions from each identified sector across the 3 platforms

Sector	Facebook	Twitter	Instagram
Running	72	38	12
Swimming	129	0	7
Gym/fitness	6	2	20
Pilates/yoga	3	3	33
Gardening	0	0	19
Dancing	5	2	11
Walking/rambling	17	0	21
Pathology	255	46	69
Beauty and aesthetics	9	6	20
Wedding footwear	4	6	21
Footwear/shoes	4	132	13
Ageing/caring	77	10	26
Parenting/pregnancy	432	27	75
Feet general	230	60	6
Popular press/lifestyle	741	13	17
TOTALS	1984	345	370

A second researcher (CV) critically analysed the results with the first researcher. Thematic analysis (40) was then performed to make sense of data was utilised to ensure that the unstructured textual data was methodically analysed.

Data analysis

The sequence and process of data extraction and analysis across the 3 platforms is shown in Fig. 1. The Facebook analysis from phases 1–3 was utilised to inform analysis of Twitter and Instagram, before the final analysis phases (4–6) were sequentially employed to inform the inter and intra-platform analysis. Some common phrases were retained as exemplars to bring the aggregated data to life, no direct quotes were utilised.

The 6 stages of Thematic Analysis (Table 3) was used to iteratively analyse the data across the 3 platforms.

Table 3
6 stages of Thematic Analysis (40)

Phase		Description of the process
1	Familiarisation	Transcribing data, reading, re-reading the data, noting initial ideas
2	Generating initial codes	Coding interesting features systematically across the data set, collating data relevant to each code
3	Searching for themes	Collating codes and gathering data into potential themes
4	Reviewing themes	Checking if the themes work in relation to the codes, and generating a thematic map
5	Defining and naming themes	Ongoing refinement of themes, generating clear names for each theme
6	Producing the report	Final analysis results into a comprehensive report of the analysis

Results

While there was some cross-platform commonality, there were several key differences in relation to the tone and nature of how platforms were utilised and engaged with, and these are identified throughout the results, but the final theme is dedicated to identifying platform specific phenomenon. Table 4 gives an overview of the themes, sub-themes, and a brief description in relation to the phenomenon identified.

Table 4
themes, sub-themes, and a brief description

Theme title	Sub-themes	Description
1. **Attitudes and beliefs about feet**: *connect and disconnect*	**Wider social and cultural phenomenon**: foot bones aren't just connected to your heel bone	The ways in which we are socially and culturally connected by concepts related to feet, and conversely, disconnections exemplified by negative language, foot health knowledge gap, and a disconnect between footwear and foot health.
	when feet stand apart: disconnect and disassociation	
2. **Beyond attitudes and beliefs**: *symbolic representations and impact when foot health is lost*	**Symbolic references**	These sub-themes inform understanding of perceptions toward feet, foot health behaviour, the value (or not) of feet, and impact when foot health is at risk.
	The value of feet, and the impact when foot health is lost	
4. **The research tool**: *platforms and how users engage*	**Platform specific overview**	There were areas of divergence and convergence both within and across the 3 platforms related to SoMe architecture, engagement norms, and lifeworld's of those engaged within it.
	Cross platform comparison	
	the power of SoMe to connect and inform	

Theme 1: Attitudes and beliefs toward feet; connect and disconnect

Connect and disconnect with feet, what they facilitate, expressions shared with others linked by experience, and footwear were central to expressed attitudes and beliefs.

Sub-theme 1: Wider social and cultural phenomenon - foot bones aren't just connected to your heel bone

The results showed that beliefs and attitudes are often not discrete to the foot but linked to wider constructs. Beliefs about the value of feet often related to what they facilitate such as dancing, travel, hobbies, social occasions, and sport. Foot strength, mobility, and flexibility were mostly connected to their function in activities such as pilates. Positive attitudes were expressed for feet that will not 'let you down', fast running feet, or special occasions such as getting married. Beliefs were expressed about dirty feet making for a happy soul, or happy runner, and how feet are hardworking, while concurrently longing for pretty feet and an equivalency between hands and feet, how both are important, and both have capacity to transmit dirt. Connecting within social worlds and a sense of self was evident, for example footwear and self-expression, getting comfortable with new trends such as wearing trainers with dresses, and fitting in socially and at work, even if it induced pain or pathology. Attitudes toward footwear indicated shoes were often coveted, with 'shoedrobes' to display shoes, having a strong 'shoe game', and excitement toward activity shoes that prioritised aesthetics above function and performance. In pathology this connectivity manifested as a trusted network of people to share advice and experience with.

Some expressed beliefs suggested being barefoot is a lifestyle philosophy, a way of life, related to happiness, and freedom. Physical connectivity to the ground was expressed such as yogic grounding, and belief systems related to environmental concerns about shoe manufacturing, materials, and fast fashion. Positive attitudes were less prevalent (Table 5), and mainly related to babies and young children who were described as comfortable with their feet, exploring them and being barefoot. Several posts referred to liking feet in specific contexts such as snow. Attitudes expressed on Instagram were sometimes abstract, such as 'badass' or 'dream' feet, where positive attitudes about signs of pathology such as beautiful vascular or veiny feet were common. Beliefs connected to commonly held theories about caring for feet were also expressed. These include the role of devices for non-pathological flat feet, overpronation, advocates for barefoot shoes and forefoot running, running technique, and the impact on muscles, joints, or callus formation, and how shoes are coffins or traps that lock feet in. Several expressions connected the season to a change in attitude or behaviour, such as getting feet summer ready.

Table 5
foot related positive descriptors and expressions

Foot related positive descriptors and expressions to describe feet			
Beautiful	gorgeous	Strong	Pretty
Cute	awesome	Lovely	Sparkle
Badass	Crazy beautiful	Willowy ivory	Happy
Dream feet	Love	Beautiful vascular feet	amazing
Adorable	Precious	Sensual	Divine
Mature	Delicious	Da Vinci toes	

Sub-theme 2 – when feet stand apart: disconnect and disassociation

There was an expressed disconnect between some users based on different belief systems such as vegans who wear leather shoes, and judgement about unshod babies in prams. Disconnect was sometimes present toward health and service providers, such as commercially led foot measuring services offering inconsistent service or advice, and healthcare professionals who could not explain or help manage symptoms, reinforced by expressions of how only those with a shared experience can truly understand. There was also disparity over whether the benefit was worth the risk when treatments were painful such as steroid injections, and knowledge gaps e.g., the importance of diabetic foot checks, and whether first shoes hindered development or helped support ambulation. There was also confusion about footwear e.g.,

when flat shoes caused pathology, or avoiding high heels did not prevent it. There was also frustration toward institutional footwear policies that did not prioritise comfort, foot health, or practicality, such as schools and workplaces.

While gender related posts were not common, some posts alluded to tension with societal expectations and boy and girl sections in shoe shops. Other posts indicated intolerance of feet being touched, being barefoot, and tickling feet to annoy someone. This sensory link was exemplified in several Tweets, advocating footwear to modulate sensory stimulus for people with autism. Several posts also suggested an upper and lower body divide, where below the waist is less valued than what sits above, with links to a lack of intellect or competence. Examples include references to a person having brains in their feet, being unable to tie shoelaces, footballers having nothing upstairs and interviewing a person's feet. One poignant Instagram contribution quoted Mahatma Gandhi; '*I will not let anyone walk through my mind with their dirty feet'.* Using feet to eat to offend others was suggested, feet as unclean and unacceptable on furniture, and school science projects to measure the dirtiest feet. Instagram posts suggested strategies to turn back time through cosmetic treatments, sometimes to hide pathology.

There was a predominance of negative attitudes about feet themselves, suggesting a disconnect from the value of feet (Table 6), even in conversations where foot health is important. For example, describing other swimmers as 'foot touchers' as a derisory comment toward other swimmers. Comments about foot fetish were often utilised to humiliate, linked to disgust, or common pathologies such as fungal feet and bunions, and qualified with expression such as 'lmao'[1] and 'lol'[2].

Table 6
negative descriptors relating to feet

Foot related negative descriptors and expressions to describe feet			
Disgusting	Manky plates of meat	cheesy	Gross
Repulsive	Webbed	Big	Creepy
Hobbit feet	Ugly	Dusty	Dirty
Smelly/sweaty	Strange	Monkey toes	Elephant feet
Putrid	Stinky	Nutty Professor feet	Hate feet

Theme 2: Beyond attitudes and beliefs: symbolic representations and the impact when foot health is lost

While not beliefs and attitudes, these sub-themes inform understanding of perceptions toward feet, and concepts that may influence foot health behaviour through the expression of symbolic references, and the impact when foot health is compromised.

Sub-theme 1: Symbolic references

There were several diverse symbolic associations with feet and footwear. Examples include walking barefoot on old city cobblestones linking a person to history, where every shoe tells a story, and how feet have a world of stories in them. Physical representations such as tan lines, dirt, and callus were expressed as a metaphorical badge of honour, symbolising work ethic. Both feet and footwear were also described as objects of art, and canvases to draw or draw upon. Footwear also symbolised personality through customization, or bright shoes and extroversion. The Instagram '#selfeet' phenomena represented shod or unshod feet photographed creatively to blend or contrast with a surface. Feet 'hitting the floor' was expressed as a symbol of being alive. There were also symbolic negative attitudes expressed related to worthiness, for example being fit (or not) to polish somebody's shoes and kissing the feet of revered statues. Some Instagram posts alluded to babies' feet symbolically making footprints on our hearts, and on the world, or after the loss

of a child. Footwear was retained as a symbolic aide memoire of a person after they have passed or happy occasions such as wedding shoes. Footwear no longer wearable due to pathology or post-pregnancy symbolised something lost. Instagram contributions also related to phenomena such as dancing in reference to 'dreaming with feet', with feet metaphorically bringing you to where your heart is.

Sub-theme 2: The value of feet, and the impact when foot health is lost

The impact of diminished foot health on activities of daily living such as going to the bathroom, gardening, walking, sports, and shopping, with implications for social participation or capacity to care for others. One Tweet acknowledged a Catch-22 scenario where a diabetic foot ulcer meant that activity to prevent disease progression could no longer be continued. Being on feet all day, and activities such as sightseeing and running were also impeded by foot pain or pathology. Several posts related to the impact of pregnancy, and how for many foot pain, hobbling, or swelling was the only negative experience, how foot shape changes, and can impact footwear choice. The language tended to be emotive or relate to a sense of futility such as likening living with diabetic foot pathology to being on a boat full of holes (Table 7).

Table 7
language used to describe the impact when foot health
is lost

Emotive language to describe impact		
Excruciating	Fear	Feet in boiling water
Indescribable	Hot	Hell
Agony	Icy	Nightmare
Constant	Suffering	Depressed
Pain	Swelling	Deformity
Puffy ankles	Soreness	Aching
numbness	Scarring	Worst pain ever
Feeling suicidal	Anxiety	Overwhelmed

Many posts shared the impact impaired foot health can have on mental health. Fear was associated with both having a toenail surgically removed, and the prognosis when foot health in diabetes was ignored for 3 years. For many, aesthetics mattered, such as bunions that made feet look like paddles. Sequalae included impaired sleep, reduced quality of the next day, and sense of self for example when clinically appropriate footwear was indicated. Positive coping strategies were represented such as keeping a positive mindset, setting new goals, fighting spirit, humour, volunteering, and distractions could help to cope with foot pain.

Diminished foot health from pathology or pregnancy also impacted capacity to work, particularly if the role was non-sedentary. This sometimes had further financial implications related to the cost of footwear and treatment products or services. However very few posts related to seeking appropriate clinical treatment. Footwear could also create a health dichotomy when safety boots provided protection but were sometimes a barrier to returning to work after foot pathology. Outside of pathology, posts alluded to barefoot vulnerability; stubbed toes, standing on objects, dropped objects, and being bitten by fish in the sea. Others alluded to the positive impact of clinical or aesthetic treatment. These included multiple expressions about pedicure-related expressions suggesting 'love' for 'new' feet post-pedicure, and celebrations of 'new' feet post-surgery. These posts were infrequent and greatly outnumbered by posts sharing negative impact. Others alluded to the impact of extrinsic factors on foot health, reflecting on changes over time when life used to be thriftier, how

having no shoes was a signal of hardship and it was common to only have two pairs of shoes, or having to choose between food or shoes. Similarly, school shoes were sometimes bought too large to increase longevity.

Theme 3: The platforms and how users engage

There was evidence of both difference and similarity in relation to how users engaged within and across the 3 platforms. Sometimes this was influenced by specific platform architecture and design, but there was also evidence of social phenomena that varied across the platforms.

Sub-theme 1: Platform specific overview

There were several characteristics that were unique to each platform in relation to who engaged, how, and for what purpose Table 8).

Table 8
Overview of differentiating characteristics of the 3 SoMe platforms

Feature	Facebook	Twitter	Instagram
Engagement characteristics	• Pathology • Reaching out/advice • Tagging others	• Selling products	• Supportive, celebratory
Length	• Unlimited • Often long posts	• Limited to 280 characters	• Unlimited/ sometimes just an image • Variation in length
Engagers	• Individuals	• Professionals and individuals	• Individuals and professionals
Other characteristics	• Organised into pages with specific interest areas • More emotive	• Neutral/less emotive	• All posts accompanied an image • Abstract concepts • Comparatively positive

On Facebook, bi-directional engagement with others sharing an experience and advice was prominent both in and outside of pathology and disconnect from those that did not. Facebook posts tended to be longer, especially when foot health was at-risk. Also, more prevalent on Facebook were judging or ridiculing others with different belief systems or experiences, where negative expressions were common. This may reflect Facebook platform dynamics, where public pages (open access) had a clearly defined interest area, unstructured, qualitative text is the primary communication tool, and there is no character limitation.

Many Tweets were orchestrated by professionals, often conversational and marketing products, or services, not always transparently. Although confined to 280 characters, complex beliefs could still be expressed, for example a Tweet relaying an interchange with a young child querying the point of shoes, flipping from protection to a belief that shoes were traps for feet. There were comparatively less tweets in the searched criteria and very little social support constructs involving emotive exchanges. The potential for SoMe to influence purchasing habits was identified, with tweets relating to trends and where to find them, and advice on how to emulate a look, often targeted at women.

Instagram posts were notably more positive by comparison, even when foot health was diminished, for example positive descriptions of feet with visible signs of pathology, or expressions of post-amputation achievements. More abstract

phenomena was almost exclusive to Instagram, such as describing feet as 'dream' feet, and '#selfeets' relating to posts about feet blending or contrasting artistically with a surface.

Sub-theme 2: Cross platform comparison

Unlike Twitter's 280-character limit, Facebook and Instagram allow unlimited text. However, the freeform potential was not always utilised. Longer Facebook posts were mostly the reserve of pages linked to pathology and children's feet and footwear. Instagram posts and tweets tended to be succinct. Reflecting the platform dynamic, initial Instagram posts were always accompanied by a graphic or photograph, whereas unstructured text was the dominant communication tool on Facebook and Twitter.

While personal experience of foot related pathology was present on both Facebook and Instagram, the nature of that expression was notably different. There was a positivity-negativity spectrum ranging from Instagram positivity for example expressing beauty in features such as prominent veins or bunions, physical signs of gardening celebrated as representations of a strong work ethic or achievements post-amputation, often depicted in images of the female foot with painted toenails. Alternatively, beliefs, attitudes and comments expressed in Tweets were often neutral and less committed to personal reflection. One notable Twitter exception was affiliation to beliefs that barefoot as a positive healthy lifestyle choice were strong. Facebook posts however were often negative not just in relation to shared experience but also expressions such as ridicule or judging, though rarely in pathology specific areas. An exception of this was in the Feet & Feet Facebook page which identifies as a place where people can share foot health problems. However, some engagers chose to express ridicule with no reference to a foot health problem or empathy with other engagers.

The dynamics of the platform sometimes influenced how the platform was utilised. As an example, fetish was referenced on all 3 platforms, however while on Facebook it was utilised as a mechanism to humiliate, offend, or joke, on Twitter and Instagram it was predominantly utilised as a hashtag where the topic was not about fetish, and the hashtag served to increase engagement. Instagram posts and Twitter-based tweets accompanied with the hashtag #lovefeet were all related to fetish. Where Instagram posts were largely about celebration of a phenomenon, Facebook tended to be more divisive, negative, or judgmental and Twitter comparatively neutral. Posts sharing or requesting foot pictures were prevalent on Instagram and Twitter, sometimes for payment. The omission of this finding on Facebook could be explained by the organisation of the platform where selling pages were omitted from the search.

Sub-theme 3: the power of SoMe to connect and inform

Several Facebook page posts indicated the power of SoMe to connect people with shared experiences. While some self-management strategies appeared to be underpinned by efficacious clinical advice, others were clearly attributed to advice from companies selling products. An example includes alleviating neuropathy with a homemade tea tree oil foot spray, or equipment to self-treat an ingrowing toenail. On Twitter and Instagram health education was promoted, such as exercise or checking feet daily. Twitter was also about connecting service and product providers to the marketplace. Empowerment and foot health was occasionally advocated outside of a pathological domain, for example exercises to strengthen dancer's feet. However, one Facebook post shared information from a clinical encounter, that was shared in a subsequent appointment for another engager, positively informing one clinician's practice. There was an implicit trust in some expressions predominantly from those who had shared a similar experience, relating to foot pathology diagnoses, treatment or product recommendations, or non-clinicians such as the reflexologist who informed an engager that serious foot pathology was the result of a traumatic event in childhood.

[1] Lmao is an abbreviation for 'laughing my ass off'

[2] Lol is an abbreviation for 'laugh out loud'

Discussion

This study explores expressions extracted from SoMe that relate to feet, foot health and footwear using a novel digital methods approach. The digital approach described differs from traditional methods in foot health research, with particular novelty in the fact that data is undisturbed by any dynamic between the researcher and the researched (41). Also, cross-platform differences were explored, which validated the use of extracting data from 3 platforms with different demographic representation and engagement dynamics. This is consistent with the findings of Davidson (42), who alludes to a tendency to 'shape shift' depending on the social situation. Another benefit of exploring perspectives in uncontrived settings is that it also illuminates the potential utility of these spaces to direct foot health messages to promote proactive self-management and prevention of foot health problems, that is responsive to how users engage with that medium.

Overwhelmingly, expressions about feet were negative. Constructs such as foot fetish, 'foot touching', referencing feet to humiliate others, and a negative connection between feet and common pathologies, suggests that foot positive expressions about feet may be perceived as socially deviant. This is supported by evidence that relates feet with disgust(43) and footwear fetish (44). This was exploited in the utilisation of #footfetish as a mechanism to engage social media users, often where the posts or tweets did not relate to fetish. This is important because stigma and social influences are known to be powerful blockers to positive behaviour change (45). Therefore, the impact of the wider social context is a powerful influencer of the beliefs, attitudes and associations that drive behaviour. It follows that where these perspectives and the social worlds that influence them are embedded in negative associations this may have a negative impact upon willingness to adopt proactive foot self-care behaviour to prevent or address foot health problems. This has important implications for influencing positive behaviour change in the future (46).

This is reinforced by expressions that indicated an above and below the waist divide, where what is below is often expressed as less valued. This resonates with the opinion piece by Ingold (47), who references Marxist philosophy, suggesting that bipedal humans are divided at the waist, while feet propel a person *within* the natural world, what is above the waist is related to intelligent designs that have the capacity to act *upon* it.

Many expressions related to the visible appearance of feet, for example signs of pathology or the importance of footwear to self-expression and fitting in social worlds or specific environments such as work. While feet were valued for what they facilitate, as 'badges of honour', visibly displaying the effects of effort, but also negatively affecting feet aesthetically and physically. The importance of aesthetics is also acknowledged in relation to coveted footwear, reinforcing evidence that signifies shoes as status symbols (48), and power expression (49), and the impact on confidence when footwear choice is removed due to pathology (50, 51). Further, expressions about babies' feet were unanimously positive, contrasted with predominantly negative expressions about the appearance of the ageing foot, suggesting the relevance of aesthetics in relation to feet.

Importantly, many aspects of belief systems evidenced in our data are not founded in a current evidence-base. There was confusion about how best to care for feet such as when to put a child in a first pair of shoes, 'normal' childhood foot development, how to treat common pathologies, and caring for the foot at risk. Mistrust also featured in relation to commercial entities such as children's footwear providers, inconsistent foot measuring and the practical utility of the advice given by some foot health professionals. This demonstrates an unmet need and opportunity to promote good habits, and behaviour underpinned by clinical evidence, from a young age, by engaging new parents in positive behaviour. This substantiates existing research that found a lack of empowerment amongst parents and carers (52). Further, while there were acknowledgements of a desire to care for aching or hardworking feet this was mostly addressed by recommendations to visit a pedicurist and not a foot health professional.

This was also a feature once foot health was compromised or at risk, when the value of good foot health became apparent. This research reflected the powerful influence between those with a shared experience, and a lack of trust toward those that had not. This manifested in expressions of confidence in recommendations for treatment modalities, products, and services, and an absence of signposting to clinical diagnosis and treatment.

Further research based on the themes identified here should explore these concepts in more depth including knowledge gaps, how to meet them, the importance of aesthetics and how these phenomena act most powerfully as a barrier or motivator to positive foot health behaviour. Gathering the perspective of the clinician might be a valuable complement to the outcomes here, to ensure that the implications for professional practice (and policy) achieve a true therapeutic alliance. Indeed, integrating the factors identified here into practice and professional training will accelerate adoption of a more person-centred approach, placing factors that are important to the individual central to professional priorities (53).

The findings from this study are consistent with engagement trends reported elsewhere, where Instagram posts tend to be positive, negativity and emotive posts are more prevalent on Facebook (34) and Twitter users are less likely to utilise the platform for social relationships (54). This is important as it highlights the value and potential of utilising different social environments to explore attitudes and beliefs, and engage people, and the power of the social situation to influence what is expressed there. Expressions about fetish are an example of how one phenomenon was represented differently cross-platform. Significantly, Instagram offered insight into a predominantly younger demographic (55), with notable attitudinal changes for example toward the foot in pathology and attitudes toward new footwear trends. This suggests a utility for SoMe as a vehicle to promote foot health messages that is sensitive to the dynamics of the demographics, attitudes, beliefs, and behaviours of those that inhabit that space.

Conclusion

This research illuminates a latent value of good foot health linked to what feet facilitate, and the importance of contextual, social, and cultural phenomena to expressed attitudes and beliefs in the presence of both good foot health and pathology. Yet most expressions about feet were negative. Where there was an investment in foot health, for example when health is diminished the trust that develops amongst people with a shared experience was powerful. It also demonstrates knowledge gaps such as factors affecting children's foot health, how to access foot health professionals, and related scope of practice. Finally, people do talk about feet in some social contexts, but not always in a way that promotes positive foot health behaviour.

Limitations

This data scrape was exploratory in nature. The interest areas and phenomenon that were explored was guided by a manual data scrape, literature review, researcher clinical and research experience, and the granularised data from existing studies that focused on specific scenarios such as a pathology-based cohort. Scraping data from SoMe has many advantages, however it also poses several limitations such as opacity around the algorithms that govern what data is returned from largescale extraction, and how some data types are prioritised over others. This is outside of the researchers' control. While this approach assures anonymity, it also limits capacity to provide and account for demographic information which may have provided important insights as to the population of interest. Further, this exploration was defined by the chosen expressions and search terms within each platform, and many more expressions exist that were not identified or explored. This was further inhibited by the dynamic nature of SoMe, where data is added to all the time, yet this research was viewed through a lens that captured a single moment in time. This lens also only allowed for the capture of expressions from people who proactively engage in SoMe. Further, due to platform limitations Instagram had to be scraped by hand as the search software was not congruous to a machine facilitated Instagram search. Finally, although there were advantages to SoMe facilitating the exploration of qualitative unstructured text

across a broad data set, this also eliminated any potential to dive deeper into the experiential phenomenon that was highlighted.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was provided from the University of Salford (HSR1819-106)

Conflicting and competing interests

The authors declare that they have no conflicting or competing interests.

Consent for publication

This manuscript does not provide any individualised quotes or other forms of data

Acknowledgements

Author details

University of Salford, School of Health & Society, Brian Blatchford Building, Frederick Road Campus, M6 6PU.

Availability of data and materials

The extracted and analysed datasets utilised in this study are available from the corresponding author upon reasonable request.

Funding

Author's contributions

SS undertook the data scrape, data analysis and interpretation, and wrote the manuscript. CV undertook secondary analysis of the data and was instrumental in guiding and advising upon the methodological design of the study. YP and SB contributed to the overall structure of the manuscript and critiqued the thematic organisation of the findings. CN contributed to final amends. All authors read and approved the final manuscript.

References

1. Keenan AM, Drake C, Conaghan PG, Tennant A. The prevalence and impact of self-reported foot and ankle pain in the over 55 age group: a secondary data analysis from a large community sample. J Foot Ankle Res [Internet]. 2019;12(1):53. Available from: https://doi.org/10.1186/s13047-019-0363-9

2. Hendry G, Fenocchi L, Woodburn J, Steultjens M. Foot pain and foot health in an educated population of adults: results from the Glasgow Caledonian University Alumni Foot Health Survey. J Foot Ankle Res [Internet]. 2018;11(1):48. Available from: https://doi.org/10.1186/s13047-018-0290-1

3. Levy N, Gillibrand W. Management of diabetic foot ulcers in the community: an update. Br J Community Nurs [Internet]. 2019;24:S14–9. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=134990810&site=ehost-live

4. Menz HB, Auhl M, Spink MJ. Foot problems as a risk factor for falls in community-dwelling older people: A systematic review and meta-analysis. Maturitas [Internet]. 2018;118:7–14. Available from: https://pdf.sciencedirectassets.com/271192/1-s2.0-S0378512218X00103/1-s2.0-S0378512218305760/main.pdf?x-amz-security-token=AgoJb3JpZ2luX2VjEB8aCXVzLWVhc3QtMSJHMEUCID1uhPZOznLNJ6T%2FBk2mKEQiC9Axb4Px9RTbhbCaKPPKAiEA5Mea2wGM37Urh2%2FejD8iNfcXLoNfRBCbJ2B1F4fH

5. Polikandrioti M, Vasilopoulos G, Koutelekos I, Panoutsopoulos G, Gerogianni G, Alikari V, et al. Depression in diabetic foot ulcer: Associated factors and the impact of perceived social support and anxiety on depression. Int Wound J [Internet]. 2020;17(4):900–9. Available from: https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/iwj.13348?download=true

6. Ramos-Petersen L, Nester CJ, Ortega-Avila AB, Skidmore S, Gijon-Nogueron G. A qualitative study exploring the experiences and perceptions of patients with rheumatoid arthritis before and after wearing foot orthoses for 6 months. Health Soc Care Community [Internet]. 2021;8. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hsc.13316

7. Coffey L, Mahon C, Gallagher P. Perceptions and experiences of diabetic foot ulceration and foot care in people with diabetes: A qualitative meta-synthesis. Int Wound J [Internet]. 2019;16(1):183–210. Available from: https://onlinelibrary.wiley.com/doi/pdf/10.1111/iwj.13010

8. Humayun MA, Meeking D. Improving a diabetes foot service to prevent amputations: the Portsmouth experience. British Journal of Diabetes and Vascular Disease. 2015;15(4):180–3.

9. Armstrong DG, Swerdlow MA, Armstrong AA, Conte MS, Padula W v, Bus SA. Five year mortality and direct costs of care for people with diabetic foot complications are comparable to cancer. Available from: https://doi.org/10.1186/s13047-020-00383-2

10. Voas D. Towards a Sociology of Attitudes. Sociol Res Online [Internet]. 2014;19(1):132–44. Available from: https://dx.doi.org/10.5153/sro.3289

11. Kasten S, van Osch L, Candel M, de Vries H. The influence of pre-motivational factors on behavior via motivational factors: a test of the I-Change model. BMC Psychol [Internet]. 2019;7(1). Available from: https://dx.doi.org/10.1186/s40359-019-0283-2

12. Ajzen I, Fishbein M. The Influence of Attitudes on Behavior. In 2005. p. 173–221.

13. Hessler D, Fisher L, Polonsky W, Bowyer V, Potter M. Motivation and attitudes toward changing health (MATCH): A new patient-reported measure to inform clinical conversations. J Diabetes Complications [Internet]. 2018;32(7):665–9. Available from: https://dx.doi.org/10.1016/j.jdiacomp.2018.04.009

14. West R, Michie S. A brief introduction to the COM-B Model of behaviour and the PRIME Theory of motivation [v2]. 2020; Available from: https://www.qeios.com/read/WW04E6.2

15. Morriss-Roberts C, Finnegan A, Casement C, Elliot C. Podolinguistics, Podopersona and Women's Everyday Shoes Choices: an Interpretive Phenomenological Diary Approach. JSM Foot Ankle. 2018;3(1049).

16. Abu-Qamar M, Wilson A. Foot care within the Jordanian healthcare system: qualitative inquiry of patient's perspectives. Australian Journal of Advanced Nursing [Internet]. 2011;29(1):28–36. Available from: https://search.proquest.com/docview/921178161?accountid=8058

17. Dasgupta N. Chapter Five - Implicit Attitudes and Beliefs Adapt to Situations: A Decade of Research on the Malleability of Implicit Prejudice, Stereotypes, and the Self-Concept. In: Devine P, Plant A, editors. Advances in Experimental Social Psychology [Internet]. Academic Press; 2013. p. 233–79. Available from: https://www.sciencedirect.com/science/article/pii/B978012407236700005X

18. Bauer G. Delivering Value-Based Care With E-Health Services. J Healthc Manag. 2018;63(4):251.

19. Public Health England. 3.8 million people in England now have diabetes. 2016;

20. Kaczmarek T, van Netten J, Lazzarini P, Kavanagh D. Effects of training podiatrists to use imagery-based motivational interviewing when treating people with diabetes-related foot disease: a mixed-methods pilot study. J Foot Ankle Res. 2021;14(1):12.

21. Topol E. The Topol Review. Preparing the healthcare workforce to deliver the digital future Interim Report June 2018 [Internet]. England NHSHE, editor. England: Health Education England; 2018. Available from: https://www.hee.nhs.uk/sites/default/files/documents/Topol Review interim report_0.pdf

22. Lynch BM, McCance T, McCormack B, Brown D. The development of the Person-Centred Situational Leadership Framework: Revealing the being of person-centredness in nursing homes. J Clin Nurs [Internet]. 2018;27(1–2):427–40. Available from: https://dx.doi.org/10.1111/jocn.13949

23. Kennedy H, Poell T, van Dijck J. Data and agency. Big Data & Society [Internet]. 2015;2(2):205395171562156. Available from: https://dx.doi.org/10.1177/2053951715621569

24. Jong S. Netnography: Researching Online Populations. In: Liamputtong P, editor. Handbook of Research Methods in Health Social Sciences [Internet]. Singapore: Springer Singapore; 2019. p. 1321–37. Available from: https://doi.org/10.1007/978-981-10-5251-4_17

25. Barbier G, Liu H. Data Mining in Social Media [Internet]. 1st ed. Aggarwal CC, editor. Boston, MA: Boston, MA: Springer US; 2011. 327–352 p. Available from: https://link.springer.com/chapter/10.1007%2F978-1-4419-8462-3_12

26. Cinelli M, de Francisci Morales G, Galeazzi A, Quattrociocchi W, Starnini M. The echo chamber effect on social media. Proceedings of the National Academy of Sciences [Internet]. 2021;118(9):e2023301118. Available from: https://dx.doi.org/10.1073/pnas.2023301118

27. Alhabash S, Ma M. A Tale of Four Platforms: Motivations and Uses of Facebook, Twitter, Instagram, and Snapchat Among College Students? Soc Media Soc. 2017;3(1):205630511769154.

28. Stebbins R. Exploratory research in the social sciences: what is exploration? Exploratory Research in the Social Sciences. 2001;2–18.

29. Gandomi A, Haider M. Beyond the hype: Big data concepts, methods, and analytics. Int J Inf Manage [Internet]. 2015;35(2):137–44. Available from: https://www.sciencedirect.com/science/article/pii/S0268401214001066

30. Kozinets R. Netnography : the essential guide to qualitative social media research. 3e. Los Angeles : SAGE; 2020.

31. Statista. Usage penetration rate of social networks among active internet users in the UK 2020 (Q3) [Internet]. Vol. 2021. 2021. Available from: https://www.statista.com/statistics/284506/united-kingdom-social-network-penetration/

32. OFCOM. Adults' Media use and Attitudes report 2020/21. Vol. 2022. 2021.

33. Gjorgievska L. 30+ Enlightening Social Media Stats in the UK [Internet]. Vol. 2022. Don't Disappoint Me; 2021. Available from: https://dontdisappoint.me.uk/resources/technology/social-media-statistics-uk/

34. Waterloo SF, Baumgartner SE, Peter J, Valkenburg PM. Norms of online expressions of emotion: Comparing Facebook, Twitter, Instagram, and WhatsApp. New Media Soc. 2018;20(5):1813–31.

35. Davies L, LeClair K, Bagley P, Blunt H, Hinton L, Ryan S, et al. Face-to-Face Compared With Online Collected Accounts of Health and Illness Experiences: A Scoping Review. Qual Health Res. 2020;30(13):2092–102.

36. Dejonckheere M, Vaughn L. Semistructured interviewing in primary care research: a balance of relationship and rigour. Fam Med Community Health [Internet]. 2019;7(2):e000057. Available from: https://dx.doi.org/10.1136/fmch-2018-000057

37. Franzke aline shakti, Bechmann A, Zimmer M, Ess CM. Internet Research : Ethical Guidelines 3.0 Association of Internet Researchers [Internet]. 2020. Available from: https://aoir.org/reports/ethics3.pdf

38. Chua S. Navigating conflict between research ethics and online platform terms and conditions: a reflective account. Res Ethics. 2021;18:39–50.

39. GDPR. General Data Protection Regulation [Internet]. 2016. Available from: https://eur-lex.europa.eu/ legal-content/EN/TXT/PDF/?uri=CELEX: 32016R0679&from=EN)

40. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol [Internet]. 2006;3(2):77–101. Available from: https://www.tandfonline.com/doi/pdf/10.1191/1478088706qp063oa?needAccess=true

41. Råheim M, Magnussen L, Sekse R, Lunde Å, Jacobsen T, Blystad A. Researcher–researched relationship in qualitative research: Shifts in positions and researcher vulnerability. Int J Qual Stud Health Well-being [Internet]. 2016;11(1):30996. Available from: https://dx.doi.org/10.3402/qhw.v11.30996

42. Davidson B, Joinson A. Shape shifting across social media. Social media and society. 18/2/21. 2021;7(1).

43. Zerbe KJ. "Your feet's too big": an inquiry into psychological and symbolic meanings of the foot. Psychoanal Rev. 1985/01/01. 1985;72(2):301–14.

44. Scorolli C, Ghirlanda S, Enquist M, Zattoni S, Jannini EA. Relative prevalence of different fetishes.(Original Article) (Clinical report). Int J Impot Res [Internet]. 2007;19(4):432. Available from: https://www.nature.com/articles/3901547.pdf

45. Michie S, Johnston M. Theories and techniques of behaviour change: Developing a cumulative science of behaviour change. Health Psychol Rev [Internet]. 2012;6(1):1–6. Available from: https://www.tandfonline.com/doi/pdf/10.1080/17437199.2012.654964?needAccess=true

46. McDonagh LK, Saunders JM, Cassell J, Curtis T, Bastaki H, Hartney T, et al. Application of the COM-B model to barriers and facilitators to chlamydia testing in general practice for young people and primary care practitioners: a systematic review. Implementation Science [Internet]. 2018;13(1):130. Available from: https://doi.org/10.1186/s13012-018-0821-y

47. Ingold T. Culture on the ground: the world perceived through the feet. Journal of Material Culture [Internet]. 2004;9(3):315–40. Available from: https://search.proquest.com/docview/38010173?accountid=8058

48. Blake J, Kippen C. Justin Blake's Fast Track Clann - Cameron Kippen - Toe sucking, foot binding, f... me pumps [Internet]. Blake J, editor. Justin Blake's Fast Track Clann. 2020. Available from: https://soundcloud.com/justin-blake-271858075/ep007-justin-blakes-fast-track-clann-cameron-kippen-toe-sucking-foot-binding-and-f-me-pumps

49. Brennan S. Listen to Japan's women: high heels need kicking out of the workplace. The Guardian (Online) [Internet]. 2019; Available from: https://search.proquest.com/blogs,-podcasts,-websites/listen-japan-s-women-high-heels-need-kicking-out/docview/2236340614/se-2?accountid=8058

50. Donovan-Hall M, Robison J, Cole M, Ashburn A, Bowen C, Burnett M, et al. The trouble with footwear following stroke: a qualitative study of the views and experience of people with stroke. Disabil Rehabil. 2019/01/10. 2019;1–8.

51. Carter K, Walmsley S, Chessman D, Rome K, Turner DE. Perspectives of patients and health professionals on the experience of living with psoriatic arthritis-related foot problems: a qualitative investigation. Clin Rheumatol [Internet]. 2019;38(6):1605–13. Available from: https://link.springer.com/article/10.1007%2Fs10067-018-04411-2

52. Hodgson L, Growcott CS, Williams AE, Nester CJ, Morrison SC. First steps : parent health behaviours related to children's foot health. 2019;

53. McCormack B. The Person-centred Nursing and Person-centred Practice Frameworks: from conceptual devleopment ot programmatic impact. Nursing Standard. 2020;35:86–9.

54. Masciantonio A, Bourguignon D, Bouchat P, Balty M, Rimé B. Don't put all social network sites in one basket: Facebook, Instagram, Twitter, TikTok, and their relations with well-being during the COVID-19 pandemic. PLoS One [Internet]. 2021;16(3):e0248384. Available from: https://dx.doi.org/10.1371/journal.pone.0248384

55. Lim M, Molenaar A, Brennan L, Reid M, McCaffrey T. Young Adults' Use of Different Social Media Platforms for Health Information: Insights From Web-Based Conversations. J Med Internet Res [Internet]. 2022;24(1):e23656. Available from: https://dx.doi.org/10.2196/23656
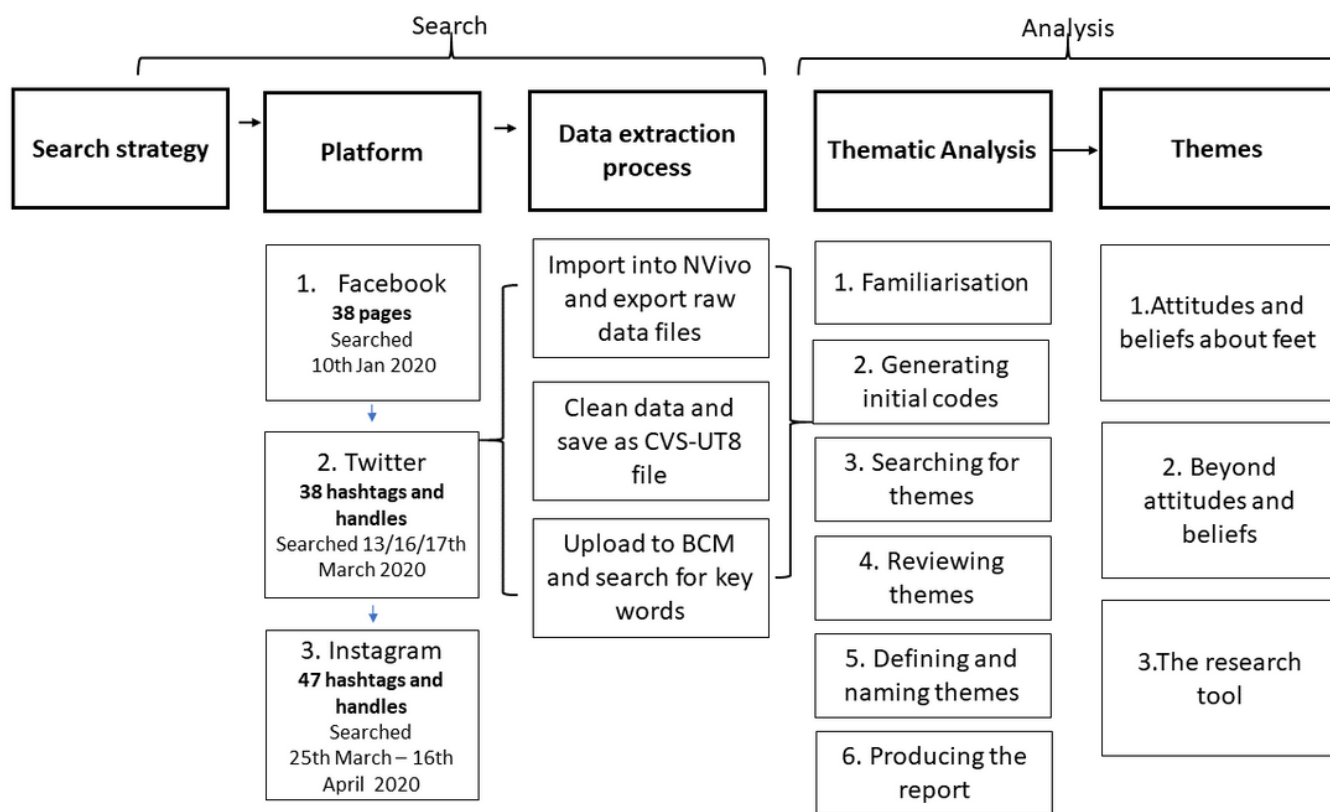
Figures

Figure 1

Data mine extraction and analysis process

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Additionalfile1.docx
- Additionalfile2.docx