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Walkability Audit Tool for Commercial Streets in the Central Areas of GCC Cities: A Scoping Review

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Abstract. The walkability is an important and notable issue. There are several methods, but the walkability audit tool is one of the most effective. This paper offers a literature review of walkability audit tools that can be applied to commercial streets in the central areas of the cities in the Gulf Cooperation Council (GCC) region. This paper highlights important aspects of urban walkability, including functionality, safety, aesthetics, comfort, context, and applicability across various urban locations. This study uses the PRISMA technique to filter and review 30 contextual papers, categorising walkability factors into four domains and acknowledging diverse cultural, climatic, and context-specific factors in the GCC city context. The study implies the availability of a customisable and culturally appropriate walkability assessment instrument that will enhance the GCC region's urban design and planning practices.

Keywords: Walkability; Urban Planning; GCC Cities; Cultural Factors; Pedestrian Safety Audit Tool; Climate-Responsive Design; Public Spaces.

1. Introduction

Walking becomes a proxy for liveability and a required commodity for healthy communities (Isalou, Litman, and Shahmoradi 2014)(Southworth 2005). City officials have often ignored that streets offer enormous potential for vehicles and parking areas and that streets should also be available to pedestrians (Frank et al. 2006)(Short and Pinet-Peralta 2010). Many discussions have been held recently about generating walkable environments and enhancing walkability. Such actions address countless issues, ranging from the obesity crisis to road congestion, environmental injustice, and social separation. Walkability has become common because of the poor quality of urban public areas, such as pedestrian paths, paving, etc., for walkways (Turoń, Czech, and Juzek 2017).

Walkability concentrates on the circumstances that enable walking- compact, physically enticing, safe regions or can be traversed. Another opinion is walkability relates to the results achieved by walkable settings or their execution, like making locations lively and sociable, improving alternate transportation, or encouraging physical activity. A few people consider walkability multidimensional and measurable, and others suggest that improving walkability offers a holistic solution to many urban issues. The term walkability is often mentioned and seldom clarified. The general theory of walkability determines four conditions for a walkable place: useful, safe, comfortable, and interesting (Speck 2012).

The term 'walkability' originated from walking, and several concepts are connected to walking (Alfonzo 2005)(Forsyth and Krizek 2010). The reasons why people might walk are rarely addressed in the walkability literature. Since there are many different walking objectives, the walkable location that suits each objective might also differ (Kaplan 1995). Many behavioural theories developed by the health industry concentrate on individual qualities, behaviours, and social environments, viewing the physical surroundings as secondary (Baranowski et al. 2003). Non-physical surroundings such as social, media, or policy have also been discussed within the literature (Alfonzo 2005)(Wells, Chomtho, and Fewtrell 2007).

Three methods have been suggested to define walkability for a broader perception of the term (Forsyth 2015). The first method relies on a simple definition based on fundamental walking settings, traversability, Proximity, and minimal safety requirements. Usually, this group of definitions is linked with the terms traversable, compact, and safe. It involves physically enticing environments, including full pedestrian facilities such as appropriate street furniture and lighting, pedestrian crossings, trees, and signage (Al-Hagla 2009). The second method suggests that walkability can be well-defined in terms of outcomes. These methods focus on how walkability can help attain the environmental preservation and social justice elements of the sustainable urban form and promote the provision of sustainable transport alternatives (Greenberg and Renne 2005). The third definition method assumes that walkability is a holistic solution for improving urban areas, making the environment generally better, human-scaled, and healthier (Talen and Koschinsky 2013).

There is confusion about the walkability concept itself and its outcomes. However, no matter how a walkable place is defined, multiple aspects beyond the material components must be considered when determining the walkability of an area.

1.1 Walkability Research and Behaviour Models

Research on walkability and related behaviour varies across fields. Many theories have examined the specific needs of pedestrians, and each has several different criteria. The various categories of pedestrian needs are classified into three sections (necessary, optimal, and social activities) based on the importance of outdoor activities in public places in the city, each with special requirements in the urban environment and physical properties (Campos 2011).

(Alfonzo 2005) developed a five-step hierarchy of walking needs based on Maslow's influential theory of human motivation (Maslow 1954) to explain how individual, group, regional, and physical-environmental factors affect physical activity behaviours such as walking Fig. 1. According to priority, the steps are feasibility, accessibility, safety, comfort, and pleasurability. (Alfonzo 2005) pointed out that requirements at the base of the pyramid must be met before moving to the next level of requirements. The hierarchical structure suggests that individuals would consider walking only if their fundamental needs were met.

The (Mehta 2008) developed a conceptual framework for studying walkable streets Fig. 2. He proposed that the characteristics of a street involve physical, land use, and social variables. Physical features include wide paths, trees and canopies, signage, attractive façades, and street furniture. Land-use influences consist of various trades and businesses, various services and products, and events organised or promoted by enterprises. Social considerations include the community – the presence of individuals, events, and activities – and actual and perceived safety from crime.

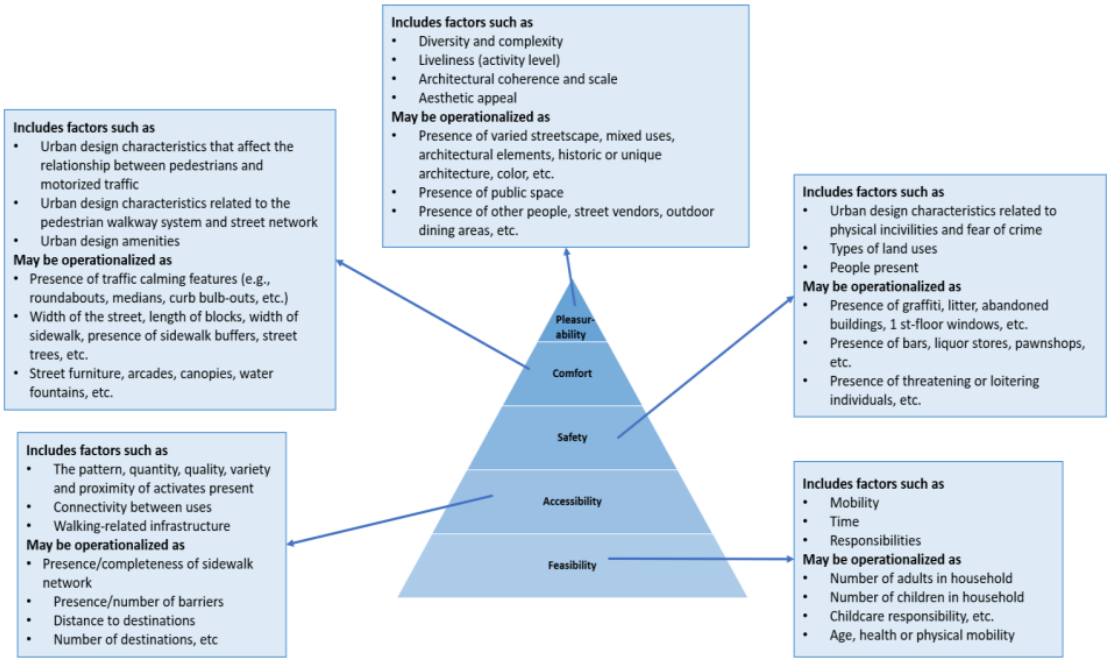

Fig. 1. Hierarchy of walking needs (Alfonzo 2005).

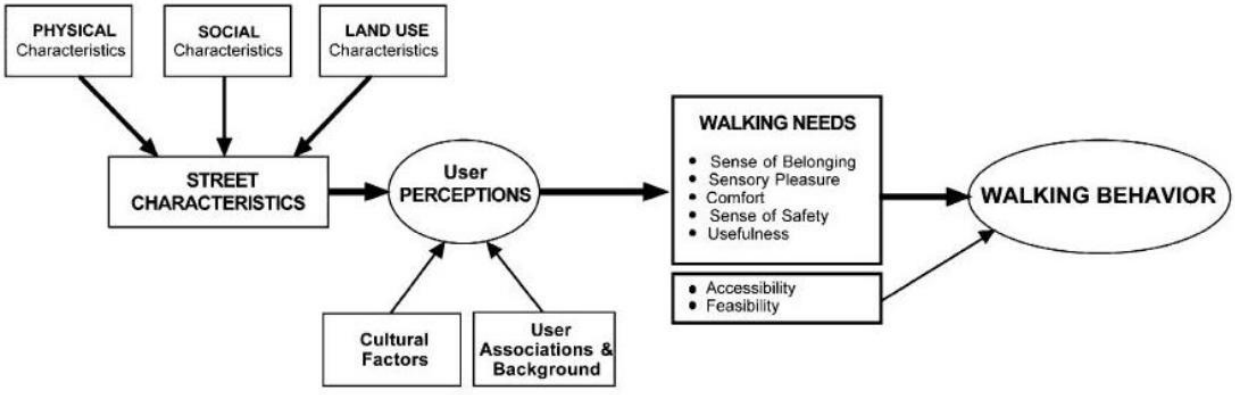

Fig. 2. Conceptual framework for walking needs on a main street (Mehta 2008).

In (Bronfenbrenner 1977), the author adapted the socio-ecological model from ecological systems theory, which divides influences into micro, meso, exo, and macro systems. These systems represent interpersonal or individual, organisational, community, and intercultural factors. While briefly introduced, Bronfenbrenner's socio-ecological model offers a foundational lens for understanding how walkability is shaped by nested systems of influence. These include:

- Microsystem: Immediate individual-level factors, such as age, gender, health, and mobility limitations.
- Mesosystem: Interpersonal influences, such as family norms, gender dynamics, and time-of-day walking behaviors.
- Exosystem: Community and urban design elements, such as sidewalk design, proximity to mosques, and shading.

- Macrosystem: Societal-level norms, including religious expectations, planning regulations, and car-centric policies.

This framework is particularly relevant in the GCC context, where macrosystemic influences like religious tradition (e.g., gender segregation, mosque orientation), urban development models, and climate policies cascade down to shape daily pedestrian experience. By integrating this model, the study identifies walkability as a multi-scalar phenomenon, which justifies the categorization of the 93 extracted factors into functional, safety, aesthetic, and comfort domains—each affected by forces at different ecological levels.

(Trost et al. 2002) created a theoretical structure for travel behaviour research according to socio-ecological theory (Glanz, Rimer, and Viswanath 2015). Their theory suggests that three main groups of factors affect a person's travel behaviour: individual factors, social-environment factors, and physical environment factors. The physical environment relates to the surrounding community features, including aesthetics, neighbourhood design, safety, accessibility of facilities, availability of services, destinations, and policies affecting land use and transport systems (Cao and Hough 2008). Though less well understood than the built environment, these factors are necessary to motivate, promote, and provide opportunities for physical activity (Giles-Corti et al. 2005). Therefore, multi-level interventions aimed at individuals, the social environment, and the built environment are more efficient than those targeting only one of these factors (Green et al. 2006).

The built environment can promote or prevent walking: land-use systems, urban design, and transport systems work together to produce a pedestrian environment that affects people's walking choices. In the context of a social-ecological framework, (Alfonzo 2005) developed a hierarchy that understands the interactive and multifaceted impacts of both private and environmental determinants of walking behaviour Fig. 3.

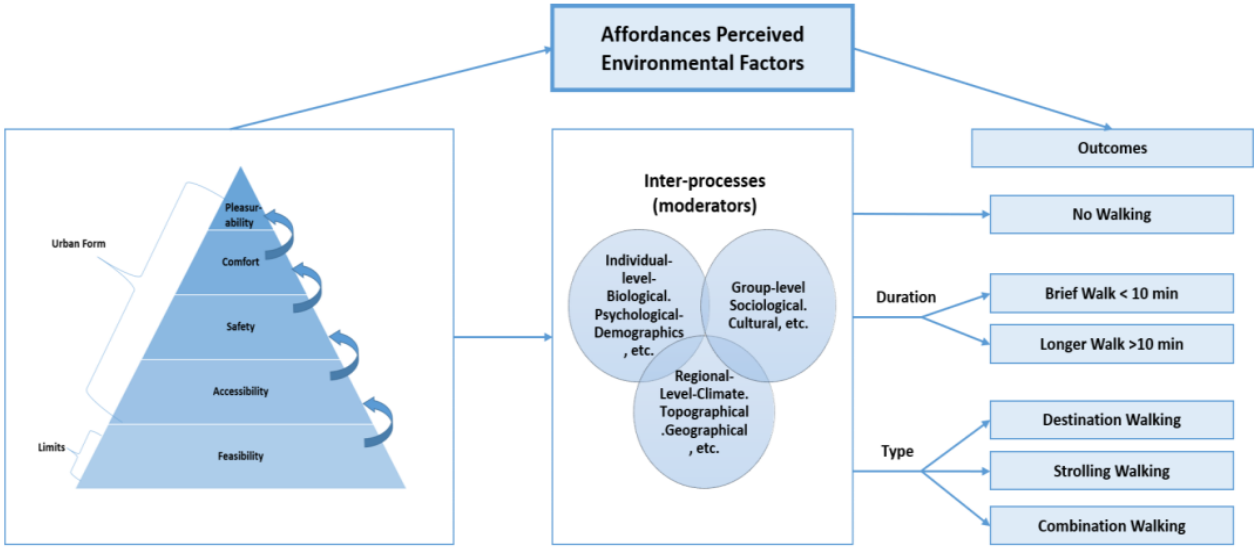

Fig. 3. Hierarchy of walking needs within a social-ecological framework (Alfonzo 2005).

2. Quality of the Pedestrian Environments

The quality of the pedestrian environment has always interested urban planners and designers (Kim, Park, and Lee 2014). Several theorists have presented various theories regarding the quality of environments.

2.1 Urban Environment Qualities and Urban Design

Eyes Upon the Street (Jacobs 1961) is one of the most influential urban design theories. Urban theorists and designers have tried to figure out what helps to make a pleasant walking experience rather than just creating an efficient dynamic flow. Unlike researchers with transport backgrounds, these theorists were interested in the non-functional aspects of walking, such as visual interest and a sense of safety (Ewing et al. 2013). Jacobs started from the assumption that streets and pathways are the main components of urban design and thus play a key role in the attractiveness and safety of cities. Jacobs theorized that the continuous use of paths ensures safety, brings people together, and accommodates children. To achieve natural surveillance in streets and public places, three principles must be considered: diversity, building design, and lighting (Jacobs 1961).

People like to see others, and live able streets occur where users walk and participate in various activities (Brownson et al. 2009). Natural surveillance can be enhanced by designing buildings so that openings such as balconies and windows are positioned towards public places and interior areas are avoided. Also, lighting can reduce crime and fear of crime during the night and improve visual perception.

Streets should serve automotive drivers and all users who share the space (Southworth 2003). Walkways must be streamlined, graduated separations eliminated, and barrier-free access needs to be improved (Alawadi, Khaleel, and Benkraouda 2021). Walkways must be well-designed in width, landscaping, paving, signs, and lighting. The sidewalk is dominated by haphazard plates, road lights, traffic control signs, water supplies, mailboxes, and parking meters (Ewing and Handy 2009).

An enclosure is a degree of covering space. An enclosure can exist where buildings, walls, trees, and other vertical parts visually limit the road and public space. A space where the height of the perpendicular components is proportional to the area's width has characteristics like a room (Ewing et al. 2013). Meanwhile, (Jacobs 1993) indicated that the ratio of construction height to street width should be at least 1:2. To evaluate the construction scale, Knaap, Song, and Ewing suggested measuring average building height and average street width (Knaap, Song, and Ewing 2005). In line with this, the spatial quality of a place can be influenced by the relationship between human size and the size of the place, and intimacy can be created by changing the characteristics of the place (Tibbalds 2012). The required average height of a building, about the street width in an urban space, depends on the viewing angle. Where the street view angle is 27 degrees and the street width is approximately 20 meters, the building height must be a maximum of three storeys (Thompson and Maginn 2012).

Motor vehicles are a danger to pedestrians and must be controlled through traffic calming (M. S. Alharthi et al. 2025), or their adverse impacts on the environment must be buffered with green buffer zones (Jacobs 1993). Cain's study found that fast-moving vehicles prevent social communication and road activities and thus critically reduce the live ability of a neighborhood. He asserted that neighborhoods and communities should be secured, though not to the extent that they are exclusive. People should not be pressured to leave the street because of traffic discomfort. Moreover, there should be areas on streets where individuals can sit, talk and play (Cain et al. 2014).

Edges are reflective of the surrounding areas, whether natural boundaries, such as seas, rivers, and mountains, or industrial features, such as the main roads used by the people during their movement (Carmona 2021). (Gehl 2010) described the line where construction meets the town. He praised 'soft edges or façades in which many shops, displays, diverse openings and non-uniform faces with varied planes or protrusions generate visual value and provide a reason for slowing down and engaging with the actual environment. High-quality edges in open areas influence people's behaviour. (Gehl 1987) noted that popular spaces are often along façades or transition zones where users can observe both spaces. Edges attract people (Ewing and Handy 2009), providing real and perceived protection through awnings, recessed entrances, or colonnades while maintaining long-distance views.

Perception is the concept environmental psychologists use in complicated diagnosis, integration, and comprehension of specific, often significant, considerations in daily life (Bell 2001). Cognitive qualities are integrated with the spatial perception of a place to create a mental image of the place (Golledge 1997). A mental image represents an individual's mind of the physical world of the surrounding environment. These people are influenced by several individual and societal factors, such as gender, personal values and capacities, local culture, emotions, norms, physical abilities, past experiences, and a combination of individual personality characteristics (Ewing and Handy 2009)(Kusenbach and Paulsen 2016). Perceptions are also affected by the activity and the physical environment.

Awareness of environmental perception, particularly the perception of place, is an essential aspect of urban design (Carmona et al. 2010). The design of an area can affect the perception of the choices available to an individual. These principles are: 1) legibility and memorability; 2) character and "sense of place"; 3) permeability and connectivity; 4) human scale; 5) safety and security; and 6) variety and interest. All of these principles can increase the value of a place; thus, positive perceptions of users can be gained (Thompson and Maginn 2012)(Ewing and Handy 2009).

The goal of a walkable city is not only to solve aesthetic problems by contributing to the creation of an attractive town but also to help address complex social and economic problems, environmental sustainability, and a lack of public welfare for residents (Speck 2012).

2.2 Planning for Pedestrians

In the early 1990s, the number of cars increased in cities, along with rapid economic growth and urban sprawl. As a result, streets were often designed to accommodate increased vehicular traffic (Lee et al. 2021). Cities have expanded, and roads have increased. As this pattern continues, the environmental pressure on cities from traffic and expansion increases (Rahaman and Lourenço 2010)(Eady 1990). This was seen in several attempts to restrict the movement of vehicles and separate them from pedestrians entirely or partially in the cores of cities. For example, some cities, such as Lisbon and Porto, in Portugal, widened sidewalks to encourage more pedestrian activity in their city centers (Balsas 2007). Key issues and street requirements have become more complex as the street is no longer only a significant traffic artery (Lillebye 1996).

Walkability policies based solely on experts' opinions may lead to environments imposed on the public. Public involvement in decision-making ensures walking environments meet their needs and improve proposals. This participatory approach, including local assessment, makes data and standards culturally appropriate, enhancing commercial streets to suit communities (Scorza et al.

2021). Public participation has grown with social media, which helps planners understand preferences and develop suitable solutions (Addas 2017).

The Complete Streets concept is described as a design approach for streets that can safely accommodate all modes of transport for the population (Forsyth 2015)(America 2014). Complete Streets is currently used in urban planning to reverse the conventional hierarchy of street users and give the utmost significance to pedestrians, followed by bicycles, buses, and cars (Dill et al. 2013)(Schlossberg and Brown 2004). The main goal of this practice is to reduce the excessive use of automobiles and achieve various environmental objectives, such as healthy lifestyles and economic prosperity, as well as to improve access and safety for all street users and reduce road conflicts (Anderson, Hildreth, and Howland 2015)(LaPlante and McCann 2011)(Shu et al. 2014).

According to (Litman 2012), Complete Streets policies should be the default mode for street designers; otherwise, justification must be given. The Complete Streets design makes crossing the road, walking to shops, and riding bikes easy and convenient (Forsyth 2015). Complete Streets design often includes the expansion of pedestrian and bicycle lanes, the reduction of vehicle lanes, and the design of safer street crossings.

2.3 Measurement of Walkability

At least four main walkability assessment methods can be used to assess walkability characteristics. The most popular parameter is the connectivity-based method using a pedestrian catchment area (PCA). It is frequently used to evaluate how accessible a specified origin or destination is (Schlossberg and Brown 2004)(Zhang and Kukadia 2005). The second most common method is the Geographical Information System (GIS) (Frank, Woroch, and Curran 2005).

The third approach is a perception-based method that usually uses interviews. This method presents qualitative parameters gathered through surveys, interviews, and questionnaires that lead to various walkability lists (Duncan, Spence, and Mummery 2005)(Leyden 2003)(Santos et al. 2008). The last method is auditing. The auditing technique is centered on the advantages of the previously mentioned methods and can include quantitative and qualitative data procedures and analyses (Rebecchi et al. 2019).

2.3.1 Recent Advances in Walkability Research

In recent years, the emphasis on walkability has intensified due to its intersection with health, sustainability, and climate resilience goals. The World Health Organization (WHO 2022) and the United Nations Human Settlements Programme (UN-Habitat 2023) have increasingly recognized walkability as a key element in fostering healthier and more sustainable cities. Studies have highlighted the significant role of urban microclimates and pedestrian infrastructure in mitigating health risks associated with sedentary lifestyles and environmental pollution (Alharbi, Raman, and Lannon 2024) (Yang, Fricker, and Jung 2024).

Advanced geospatial tools and big data analytics have also transformed walkability assessments. For instance, high-resolution spatial mapping and real-time pedestrian data collection now enable more accurate evaluations of walkable environments (Zou, Chen, and Yu 2025). These tools consider previously overlooked factors such as heat exposure, air quality, and pedestrian flow patterns, particularly relevant for cities in hot climate zones like the GCC (Almajadiah 2023).

Recent developments have also focused on accessibility and equity, including the refinement of walkability and wheelability audit tools for diverse users. For instance, Deturbide and Terashima (Deturbide and Health 2025) proposed enhancements to rollability audits by introducing qualitative metrics that capture the real-world experiences of users with mobility constraints. Similarly, Mahmood et al. (Mahmood et al. 2025) adapted the SWAN tool through a multi-stakeholder lens to address diverse disabilities in neighborhood audits.

Technological integration is also advancing. (Wang, Wong, and Cheng 2025) introduced a BIM-GIS framework integrated with CCTV analytics for real-time walkability evaluations, demonstrating strong potential for urban infrastructure planning. A recent study by (Ramakreshnan et al. 2021) visualizes the global trajectory of walkability research and supports the need for localized and accessibility-focused future studies.

Moreover, the integration of equity and inclusivity in walkability research has gained prominence. Recent studies advocate for inclusive urban design that addresses the mobility challenges of vulnerable populations, including women, children, the elderly, and persons with disabilities (UN-Habitat 2023)(Hafezi 2023). These considerations are particularly important in the GCC context, where cultural and climatic factors heavily influence public space usage.

Finally, climate-responsive urban design principles are increasingly incorporated into walkability frameworks. Passive cooling strategies, shading solutions, and green corridors are being promoted as essential components for enhancing pedestrian comfort in extreme weather conditions (M. A. Alharthi et al. 2025). These strategies are aligned with the broader global sustainability agendas, such as the UN Sustainable Development Goals (SDG 11: Sustainable Cities and Communities).

In the context of this study, the following definitions are applied to clarify the four primary domains of walkability. Functional walkability refers to the presence and continuity of infrastructure that enables movement on foot, such as sidewalks, crossings, slope management, and accessibility to services. In GCC cities, functionality must also address the adaptation to car-centric design and fragmented pedestrian networks. Safety includes both physical protection from vehicles and crime, and perceived safety, which in GCC cities involves gender-sensitive spatial design, lighting adequacy, and crowd visibility in public zones. Aesthetic quality encompasses the visual and symbolic experience of walking, incorporating architectural identity, greenery, cultural landmarks (e.g., mosques), and building facades. In GCC urban contexts, this often intersects with Islamic design traditions, façade treatments, and historic preservation. Comfort addresses thermal, sensory, and physical ease during walking, including shade provision, seating availability, material selection for heat mitigation, and airflow design in high-temperature environments.

These contextualized definitions help guide the assessment criteria and weighting mechanisms proposed later in the GCC-specific audit framework.

2.4 Determination of Street-Level Walkability

The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method was employed in this study to ensure a transparent, structured, and replicable process for identifying and reviewing relevant literature. Given the interdisciplinary nature of walkability spanning urban design, public health, and environmental sustainability, a systematic approach was necessary to minimize bias and enhance the reliability of the findings.

The PRISMA method allowed the study to clearly define inclusion and exclusion criteria, ensuring that only contextually relevant studies were analysed. Provide a transparent screening process, improving the credibility and traceability of reviewed materials. Synthesise diverse research findings systematically to inform the development of a walkability audit tool that is both comprehensive and contextually appropriate for the GCC region. This rigorous methodological approach strengthens the validity of the study's conclusions and supports the development of policy-relevant recommendations for improving walkability in the unique socio-cultural and climatic context of GCC cities.

Research worldwide explores factors affecting walkability, pedestrian services, and tools for urban planning. Approaches and suggested factors vary widely. A systematic quantitative literature review identified key street-level walkability factors. Of the 796 research papers, 30 were selected using the PRISMA technique (Pickering and Byrne 2014) to ensure unbiased and replicable results, as shown in Fig. 4.

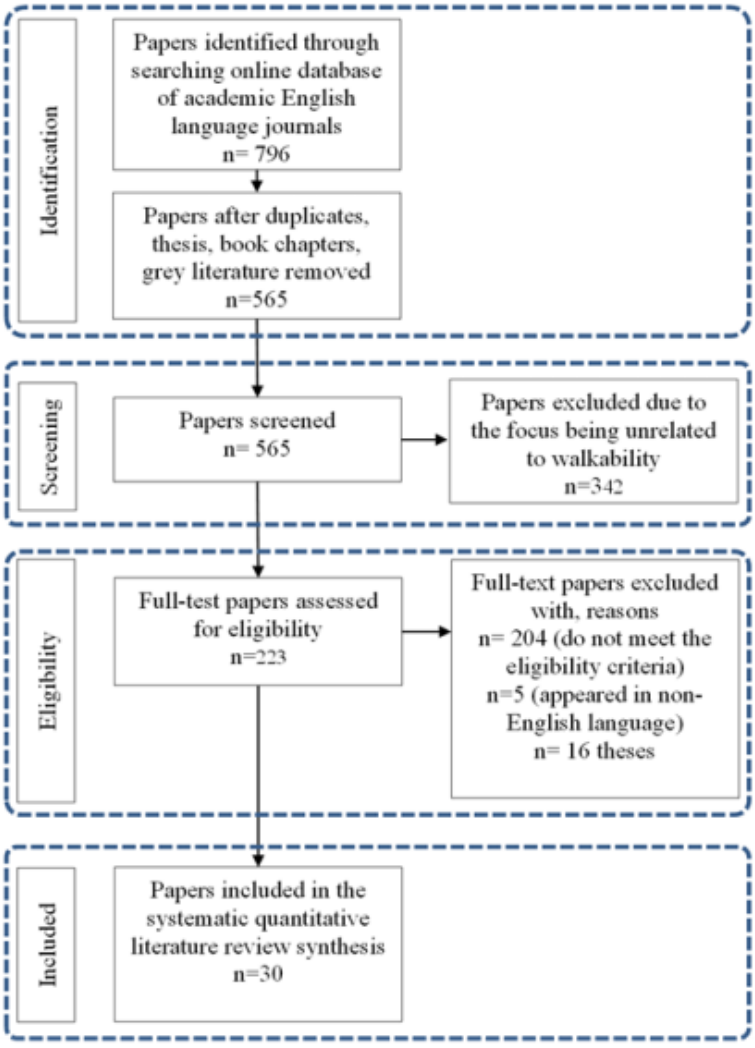

Fig. 4. Phases of the PRISMA technique.

2.4.1 The PRISMA Technique

The PRISMA protocol describes the proposed systematic review of the study, including the rationale for the review. It outlines the steps taken to eliminate biases when performing the review. Figure 4 shows the PRISMA process. The review steps of the PRISMA method include the protocol title, research question, terminologies used in databases, search strategy and initial selection, eligibility criteria, data collection process, and cross-check and synthesis of results.

While the PRISMA methodology provides a structured and transparent framework for identifying and analyzing relevant literature, certain limitations must be acknowledged. Firstly, the review yielded only 30 eligible studies out of 796 initially screened, which raises the possibility of selection bias, especially since inclusion depended on title/abstract relevance and methodological clarity. Secondly, although not explicitly stated, the search was limited to English-language publications, which may have excluded valuable studies conducted in Arabic or other languages relevant to the GCC region. This introduces language bias, a common limitation in global literature reviews. Finally, the underrepresentation of GCC-based empirical studies, with only one paper originating from the region, limits the direct contextual applicability of the results. To mitigate these issues, additional regional literature was reviewed narratively in later sections, and future studies are encouraged to include multilingual searches, grey literature, and field validations to improve regional relevance.

The literature search was conducted using the following databases: Scopus, Web of Science, and Google Scholar. The search included publications from January 2000 to December 2024 to capture both foundational and recent studies relevant to walkability audits. The search terms included variations of: walkability, audit tools, pedestrian environment, urban design, accessibility, comfort, safety, and GCC cities. Only peer-reviewed articles in English were included. Duplicate entries and unrelated studies were excluded through title, abstract, and full-text screening.

2.4.2 Results of the Systematic Review

The selected research papers were reviewed from five perspectives based on their geographic and temporal distribution, scope, publication type, data collection and analysis, and street-level walkability factors.

Geographic and temporal distribution: The selected papers originated from 19 countries. The USA and Italy published the most four papers, as shown in Table 1. However, since one paper (paper 21) considered seven countries, the total number of countries studied is 25. The countries are mostly distributed widely, with some smaller regional clusters. When looking into the temporal distribution of the research papers, it can be seen that the number of papers increases with time Fig. 5.

As shown in Fig. 5, there has been a notable increase in walkability-related publications over the past 10 years, particularly after 2014. This temporal trend reflects a growing global and institutional emphasis on pedestrian-friendly design, public health, and climate-responsive urban planning. The upward trajectory also suggests that while the GCC region remains underrepresented in current literature, the global discourse is expanding in ways that can inform emerging regional priorities such as Saudi Vision 2030 and sustainable city initiatives in Dubai and Doha.

Table 1. No. of papers by the country of origin.

	Countries	No. of Papers			Countries	No. of Papers
1	Italy	4		14	Czech Republic	1
2	USA	4		15	Denmark	1
3	Australia	3		16	Egypt	1
4	Iran	3		17	Hong Kong	1
5	Brazil	2		18	Malaysia	1
6	Colombia	2		19	Mexico	1
7	India	2		20	New Zealand	1
8	Spain	2		21	Portugal	1
9	Turkey	2		22	South Korea	1
10	Algeria	1		23	Taiwan	1
11	Belgium	1		24	UAE	1
12	Canada	1		25	United Kingdom	1
13	China	1				

Scope: Six papers (20%) researched multiple cities, while 22 (73.3%) investigated only one city or neighborhood. Two papers (6.7%) did not disclose the specifics in Table 2.

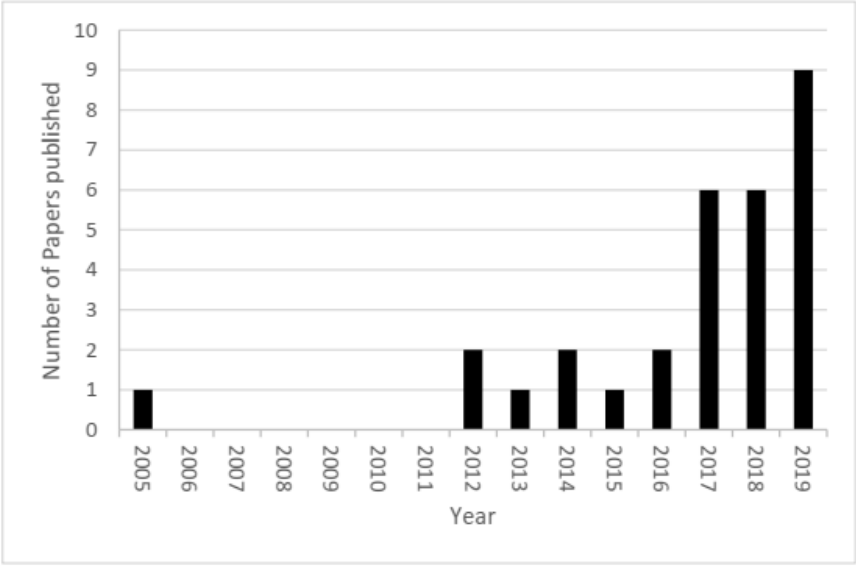

Fig. 5. The temporal distribution of publications.

Table 2. The scope of the research papers.

	No. of Papers	Percentage
One City	22	73.3%
Multiple Cities	6	20.0%
Unspecified	2	6.7%
Total	30	100.0%

Subject Areas and Publication Types: The papers concentrate on three main subject areas: urban planning, transportation, and health, as shown in Table 3. Most papers (28, 93.3%) were published in journals, of which 'Sustainability' accounts for the highest number of papers (4). The remaining two papers were presented at conferences Table 4.

Table 3. Subject areas of the research papers.

Subject Area	Journal Articles		Conference Papers	
	No. of Papers	Percentage	No. of Papers	Percentage
Urban Planning	16	53.3%	1	3.3%
Transportation	8	26.7%	1	3.3%
Health	4	13.3%	0	0.0%
Total	28	93.3%	2	6.6%

Table 4. Publication of the research papers.

Publication Type		Name of the Journal / Conference	Number of Papers	Percentage
Journal Papers	1.	Sustainability	4	13.3%
	2.	International Journal of Environmental Research and Public Health	2	6.7%
	3.	Health Place	2	6.7%
	4.	Journal of Urban Design	2	6.7%
	5.	TeMA-Journal of Land Use, Mobility and Environment	2	6.7%
	6.	International Review for Spatial Planning and Sustainable Development	1	3.3%
	7.	Landscape and Urban Planning	1	3.3%
	8.	Transportation Research Record: Journal of the Transportation Research Board	1	3.3%
	9.	Open House International	1	3.3%
	10.	Transportation	1	3.3%
	11.	BMC Public Health	1	3.3%
	12.	Archnet-iJAR: International Journal of Architectural Research	1	3.3%
	13.	KSCE Journal of Civil Engineering	1	3.3%
	14.	Indian Journal of Transport Management	1	3.3%
	15.	Armanshahr Architecture & Urban Development	1	3.3%
	16.	The Journal of Transport and Land Use	1	3.3%
	17.	Computers, Environment, and Urban Systems	1	3.3%
	18.	International Journal of Tourism Cities	1	3.3%
	19.	Epidemiologia e Prevenzione	1	3.3%
	20.	Sustainable Cities and Society	1	3.3%
	21.	Transport Reviews	1	3.3%
		Total	**28**	**93.3%**
Conference Papers	22.	Proceedings of the Eastern Asia Society for Transportation Studies	1	3.3%
	23.	Proceedings of the Institution of Civil Engineers-Urban Design and Planning	1	3.3%
		Total	**2**	**6.7%**

Data collection and analysis methods: Eight selected papers used quantitative and nine qualitative analyses, while 13 papers (43.33%) used a mixed approach Table 5. The most common data analysis methods were rating system methods (points/scores) and regression analysis Table 6.

Table 5. Data analysis type.

Data Type	Number of Papers	Percentage
Quantitative	8	26.67%
Qualitative	9	30.00%
Mixed	13	43.33%
Total	30	100.0%

Table 6. Analysis methods.

Methods of Analysis	Number of Papers	Percentage of Papers
Rating Systems (Score, Point)	12	40.0%
Regression (Linear, Stepwise, etc.)	9	30.0%
Spatial Analysis	5	16.7%
Analytical Hierarchy Process	3	10.0%
Factor Analysis	3	10.0%
Inter - Rater Reliability test	3	10.0%
Exploratory	2	6.7%
Kappa Statistics	2	6.7%
Pearson Correlations	2	6.7%
ANOVA tests	1	3.3%
MNL models	1	3.3%
Negative Binomial Models	1	3.3%
Spearman's Correlation test	1	3.3%
Structural Equation Modelling	1	3.3%

Street-level walkability factors: A consistent categorization of street-level walkability factors is lacking due to varying research approaches. Microscale details of streets influence confidence, comfort, and safety when walking (Cain et al. 2014)(Sallis et al. 2015). These attributes, assessed through walk audits or observations, are more adaptable to short-term changes than macroscale factors. Reliable observational measurements of microscale attributes have been reported (Brownson et al. 2009). This review identified essential measurable walkability factors: functional, safety, aesthetic quality, and comfort. Overlap between categories was minimized.

From 30 studies, 93 walkability factors were extracted in Tables 7 and 8. Safety and functional factors were the most prominent, with 30 and 26 items. Landscaping was the most cited factor (21 studies), followed by “pedestrian crossings along the street” (14 studies) and “pedestrian path width” (13 studies).

While the systematic review identified 30 relevant papers, it is important to acknowledge that only one of these originates directly from the GCC region (UAE). This presents a limitation in terms of direct contextual generalizability, especially given the region’s unique socio-cultural norms, religious practices, and extreme climate. The majority of the studies reviewed reflect walkability frameworks developed in Western, Asian, or temperate-climate urban environments, where pedestrian behavior and public space design priorities differ significantly.

To address this gap, the present study has supplemented the systematic review with GCC-specific urban studies and empirical findings discussed in Sections 2.5 and 2.6. These include contextual considerations such as mosque proximity, gendered spatial norms, and microclimatic adaptation, drawing on region-specific literature (Alharbi et al. 2024)(Almajadiah 2023)(Alawadi et al. 2021). The decision to include global literature was guided by the need to identify transferable urban design principles, particularly those already tested in high-temperature, auto-centric, or culturally conservative cities.

Nonetheless, this limitation points to a clear research gap: the urgent need for more empirical walkability studies grounded in the urban realities of GCC cities. Future research should prioritize primary data collection in local settings to validate and localize the broader frameworks outlined in this review.

Table 7. Functional and safety factors proposed by the research papers.

	Functional Factors	No. of Papers
Footpath Conditions		
1	Pedestrian path width	13
2	Presence of obstacles on footpath	11
3	Quality of footpath pavement	4
4	Cleanliness/maintenance of paths/streets	10
5	Pedestrian path continuity	4
6	Drainage	1
Street Conditions		
7	Parking availability	8
8	Presence of bike lanes	7
9	Type of street (one-/two-way street)	6
10	Number of vehicle lanes	3
11	Street width	2
12	Public transport conditions	1
Accessible Pedestrian Network		
13	Accessibility of public transit	6
14	Accessibility of shops and services	6
15	Path length	1
16	Path directness	1
Street Connectivity		
17	Slope (sidewalk steepness)	10
18	Alternative routes/paths	4
19	Meeting places (nodes)	2
20	Block length	4
21	Presence of dead-ends routes (cul-de-sacs)	4
22	Street network	1
23	Distance between intersections	1
Land use mix		
24	Type of land use	3
25	Land use distribution	3
26	Mixed-used building	2

	Safety Factors	No. of Papers
Safety from Crime		
27	Variety of activities	8
28	Crime rate	4
29	Presence of different social classes	2
30	Presence of a mix of ages	2
Sense of Security		
31	Provision of lighting	14
32	Visibility while walking	4
33	Presence of police	4
34	Presence of security cameras (CCTV)	3
35	Presence of abandoned buildings	3
36	Street-facing entrances	2
37	Pedestrian protection from traffic accidents risk	1
38	Service hours of activities	1
39	Presence of abandoned cars (damaged)	1
40	Upper-floor windows	1
41	Presence of graffiti	7
42	Presence of homeless people	1
Traffic Safety		
43	Pedestrian crossings along streets	14
44	Buffers between streets and footpaths	12
45	Street signage	12
46	Traffic speed	9
47	Number of intersections	9
48	Traffic volume	6
49	Pedestrian wayfinding signage	5
50	Traffic calming measures	5
51	Pedestrian volume	4
52	Pedestrian signals	4
53	Motorists' behaviour	2
54	Presence of underpass/foot-overbridge	2
55	Pedestrian crossing time	1
56	Presence of guard rails	1

2.5 Cultural Aspects in the Built Environment of GCC Cities

Local communities and cities thrive when the local culture is routinely recognised and appreciated (Gibson et al. 2012). Therefore, a city that values walking highly should consider cultural, climatic, and contextual considerations. This, in turn, provides insight into the functionality of the public realm, including local walking environments. Tables 7 and 8 summarise 93 walkability elements extracted from various studies worldwide. However, given the distinct cultural aspects of the GCC community, it is vital to explore the most prominent cultural factors that affect the GCC environments in general, particularly the GCC walking areas.

2.5.1 Cultural Determinants and Spatial Design Implications in GCC Walkability

The unique interplay of cultural expectations and climatic extremes in the GCC context significantly shapes walkability. For instance, privacy requirements, rooted in gender norms and Islamic spatial traditions, necessitate urban features that accommodate separate walking flows, shaded alcoves, and visual buffering in public streets. This is particularly important in commercial areas, where outdoor movement patterns differ by gender and time of day. Design interventions such as arcaded walkways, modular seating areas with partitions, and staggered building setbacks have been shown to enhance perceived safety and privacy, encouraging greater female participation in outdoor walking (Almahmood et al. 2017).

The proximity to mosques is not only a religious requirement but also a vital determinant of pedestrian flow during peak prayer hours. A well-designed street network in a GCC city should consider mosque-oriented radial pathways, resting spaces near entrances, and universal design features such as ramps and tactile surfaces for elderly and disabled worshippers. However, current mosque access infrastructure, particularly for wheelchair users, remains inadequate across most cities (Al-Jadid 2013)(Evcil 2009).

Like any other public place, the walking environment is formed by explicit and implicit rules often defined by social differences (Maneval 2019). The unique conservative Islamic culture of the Arabian GCC countries is linked with the various environments. The GCC environment is influenced by several critical cultural aspects derived from Islamic culture, such as the separation of the sexes, respect for the individual's privacy, and the utmost decorum in dress (Furlan and Faggion 2017). This part of the study highlights the GCC context influencing the local walking environments. Then, the most critical cultural street-level walkability factors are determined for the GCC.

While GCC cities share a number of urban planning characteristics, such as automobile dependency and rapid post-oil urbanization, they are not monolithic in their form or function. For instance, Dubai's grid-based master planning and coastal corridor development differ markedly from Riyadh's dispersed, car-oriented layout, which features lower walkability and fewer transit-integrated commercial districts. Similarly, Muscat's topography and suburban sprawl, shaped by mountainous geography, pose unique walkability challenges distinct from those in flatter cities like Doha. These differences affect factors such as microclimate intensity, land-use connectivity, cultural space norms, and infrastructure maintenance standards. Therefore, while the proposed audit framework offers a unified structure, its application must be flexibly adapted to account for city-level planning dynamics and distinct socio-environmental constraints within each GCC context.

Table 8. Aesthetic qualities and comfort factors proposed by research papers.

	Aesthetic Qualities	No.of Papers
Imageability		
57	Landscaping	21
58	Historical buildings	4
59	Landmarks	3
60	Public open spaces	2
61	Buildings with identifiers	7
Enclosure		
62	Presence of trees	7
63	Proportion of sky (ahead/across)	4
64	Street wall continuity proportions	4
65	Tree spacing	2
66	Street width to building height ratio	1
Human Scale		
67	Average building height	10
68	Street vendors	3
69	Small planters	2
Transparency		
70	Amount of activity overflow into street	8
71	Proportions of windows at street level	5
72	Active edges in ground floors	5
Complexity		
73	Public art	10
74	Presence of outdoor dining	3
75	Diversity of façade materials	2
76	Street performers/entertainers	1
77	Distinctive business signs	1

	Comfort Factors	No.of Papers
Street Furniture		
78	Canopies & shelters	5
79	Benches	5
80	Public toilet	2
81	Water cooler	1
Disability Infrastructure		
82	Kerb ramp/ kerb cut	2
83	Tactile pavement	1
Availability of Amenities		
84	Presence of commercial zones	10
85	Presence of residential zones	4
86	Presence of children's playgrounds	1
87	Presence of institutional zones	1
Attractive Buildings		
88	Setbacks and arcades	4
89	Maintenance of buildings	4
Environmental Perceptions		
90	Level of noise	8
91	Thermal comfort	4
92	Air pollution level	3
93	Distinct smells	1

2.5.2 The GCC Context

GCC cities adopted an automobile-dependent planning model in the 1970s, mirroring the North American pattern (Mubarak 2004). This model prioritizes private car use, which remains a common practice in the region (Aldalbahi and Walker 2016)(Alskait, McDonald, and Hassounah 1997). Despite some distinctions, GCC cities share similar urban planning systems (Elsheshtawy 2015). In 2015, the number of vehicles in the GCC reached 26,025,752, with Saudi Arabia alone accounting for 17,856,097 due to its large population (Zaidan, Al-Saidi, and Hammad 2019). The lifting of the driving ban for women in Saudi Arabia in 2018 is expected to increase vehicle numbers in the future significantly. This heavy reliance on private cars has led to a decline in walking, mainly due to poor-quality pedestrian infrastructure. The automobile-centric planning model has accelerated urban sprawl, negatively impacting social life and the environment (Newman and Kenworthy 1999)(Beatley and Wheeler 2004). Residents in sprawling cities are less likely to walk and more likely to rely on private vehicles to reach destinations (Ewing and Rong 2008).

In developed Western cities, public transportation accounts for over 51% of daily trips (UN-Habitat and Institute 2018) and plays a vital role in urban mobility (Hatwar and Gajghate 2014).

However, public transport is less utilized in car-dependent cities, often below 10%. For instance, in Riyadh, bus services account for under 2% of the city's 8 million daily trips (Al-Fouzan et al. 2012)(Alqahtani et al. 2012). Riyadh's transformation from a compact, human-scaled urban form to a car-oriented city has made walking unpleasant and unsafe. Excessive car use is fueled by low operational costs, weather conditions, social factors, and the rising oil boom, facilitating private car ownership (Mubarak 2004)(Al Dalbahi, Abdulrahman, and Ansari 2019). The absence of effective public transport, pedestrian infrastructure, and integrated urban planning exacerbates congestion and dependency on single-occupant vehicles (Al-Mosaind 2018).

Most GCC cities face similar mobility challenges due to their auto-centric designs, inefficient public transport, and neglected pedestrian infrastructure. Streets are designed for vehicles, with little consideration for pedestrian comfort, such as shading, green elements, or safety features (Alawadi et al. 2021)(Furlan and Faggion 2017). Old, vibrant streets are often disconnected from the urban fabric, reducing liveability and contributing to public spaces' physical and social decline (Carmona 2021).

The planning patterns in GCC cities have led to serious adverse effects, including air pollution, unsafe traffic, and health issues. Increased vehicle mileage is a significant cause of urban air pollution, with urban sprawl contributing to higher morbidity and mortality rates (Coughenour, Archer, and Lacovara 2013)(Frank et al. 2006). Riyadh's air quality is about 15 times worse than the safe level, according to the World Health Organization (WHO), with vehicles identified as the primary source of street-level pollutants (Alotaibi 2017). The reliance on private cars, combined with the absence of alternative transport systems, has significantly impacted citizens' health and quality of life (Lindenberg and Steg 2007)(Zavitsas et al. 2010). The rise in automobile use poses environmental threats and contributes to pedestrian discomfort in walking environments (Gärling et al. 2008)(Bamberg et al. 2011)(Alotaibi 2017).

The unhealthy lifestyle of residents is another consequence of urban sprawl and design policies. These include reduced physical activity, higher body mass index (BMI), and increased traffic accidents (Ewing and Rong 2008). GCC cities report some of the highest rates of lifestyle diseases globally, such as Type II diabetes, cardiovascular diseases, and obesity (Khalil et al. 2018), as shown in Table 9. Saudi Arabia alone has a diabetes prevalence rate of 20.5%, and about 40% of the population in GCC countries is classified as obese, a number expected to grow with increasing inactivity (Khoja et al. 2017).

Table 9. Prevalence of diabetes in the six GCC countries.

GCC Country	Prevalence of Diabetes (%)
Saudi Arabia	20.50%
Kuwait	17.50%
Bahrain	17.50%
Qatar	16.30%
UAE	10.70%
Oman	8.20%

Traffic safety is one of the most critical concerns in GCC cities, with road fatality rates among the highest in the world, including a significant number of pedestrian fatalities (Awadalla and de

Albuquerque 2021). Although specific data on pedestrian deaths is scarce, the WHO estimated that Saudi Arabia's road traffic fatality rate in 2016 was 27.5 per 100,000 people, resulting in 9,311 deaths that year, many of which involved pedestrians. In the UAE, the fatality rate was 18.1 per 100,000 people, with pedestrians accounting for 24% of total road deaths. Oman had a fatality rate of 16.1 per 100,000, with pedestrians comprising 23% of road fatalities. Despite these alarming figures, none of the six GCC countries adhere to the pedestrian protection standards set by UNECE WP.29 ((WHO) 2018).

Road infrastructure design plays a key role in improving safety for all users, including pedestrians and cyclists. Roads should include safety measures such as well-placed crossing points, speed control features, and other traffic-calming strategies to minimize pedestrian fatalities and injuries (Awadalla and de Albuquerque 2021). However, in GCC cities, like the commercial streets in central Riyadh, many streets lack basic pedestrian protections, including safe crossings.

2.6 Determination of Local GCC Street-Level Walkability Factors

Among the most prominent factors affecting the GCC public environment are the requirements for privacy, Proximity to mosques, the local climate, and national heritage.

2.6.1 Privacy Requirements

In the GCC, privacy discussions often center on gender segregation and classifying public and private spaces (Rahman and Nahiduzzaman 2019). Men are more likely to walk outdoors, while women prefer indoor spaces like shopping malls due to cultural and safety concerns (Almahmood et al. 2017). Women's walking behavior is also influenced by the time of day and the need for family-friendly environments (Aljabri and others 2014). This segregation limits women's recreational opportunities and access to public spaces, affecting their health and social interactions (Peters 2010)(Corbett 2004).

These patterns highlight the need for walkability audits in the GCC to incorporate gender-sensitive criteria, such as separate shaded seating areas, privacy-oriented spatial buffers, and secure walkways that are active, visible, and monitored. Street design must also consider time-of-day variations in female pedestrian activity, ensuring adequate lighting, passive surveillance, and accessible amenities in both commercial and residential zones.

Public streets and sidewalks are among the few spaces where men and women can coexist, making walking a relevant topic in GCC urban contexts (Almahmood et al. 2017)(Menoret 2014). Privacy considerations also extend to residential areas, where transitional spaces are designed to offer flexibility and maintain seclusion for residents (Germeraad 1993).

2.6.2 Proximity to Mosques

Each GCC city has a distinct Islamic and cultural identity centered around the mosque, which historically served as the city's nucleus. The traditional Islamic town comprises a mosque, streets, markets (bazaars), and squares extending into a network of alleys for commercial and residential purposes (Elsheshtawy 2015). Spatial patterns in Islamic cities reflect the social organisation, with mosques ideally located within a 5-minute walk from any part of the city (De Siqueira and Al Balushi 2020)(Rahman and Nahiduzzaman 2019).

Accessibility to public spaces, especially mosques, remains a challenge for disabled individuals. Globally, wheelchair users face barriers, such as in Istanbul's mosques (Evcil 2009). In Saudi Arabia, where 3.73% of the population has functional impairments, wheelchair users often struggle to access mosques (Al-Jadid 2013). This lack of accessibility isolates disabled individuals from an integral part of their faith.

In addition to spatial integration, universal accessibility must be central to walkability audits. Many mosques in the region lack ramps, tactile guidance surfaces, or appropriate signage for people with visual or mobility impairments. Given that mosque visits are a daily requirement for many, particularly the elderly, such gaps in accessibility infrastructure disproportionately exclude vulnerable populations from full urban participation.

2.6.3 Microclimate Control

Harsh weather is a significant challenge to walkability in GCC cities. In summer, temperatures in desert cities like Riyadh exceed 45°C, while coastal cities like Jeddah face over 40°C with high humidity (Addas and Maghrabi 2020). Urban sprawl intensifies heat through the "urban heat island" effect, where artificial surfaces absorb and release heat (Oke 2004)(Stone, Hess, and Frumkin 2010). Studies highlight extreme heat as a significant barrier to walking, with participants emphasizing the need for shade (Alawadi et al. 2021)(Ahmad et al. 2021).

Despite similar weather challenges, other cities worldwide have improved walkability through strategic urban design. Measures include landscaping, shade, ventilation, and water-misting systems to cool pathways (Webber 2010)(Yang, Qian, and Zhao 2016). Materials like wood, rather than metal, are recommended for urban furniture in hot climates (Yücel 2013). Addressing microclimate conditions is vital to creating comfortable walking environments (Arif and Yola 2020)(Mushtaha et al. 2018).

2.6.4 National Heritage

Cultural heritage includes the places, customs, and traditions deemed significant and worthy of preservation. It enriches community vitality through diverse arts and cultural activities and enhances social and economic contexts (Blečić, Cecchini, and Trunfio 2018). National heritage reflects Islamic teachings, offering unique identity and sensory experiences (Romice et al. 2017). Traditional GCC attire influences mobility, such as the Saudi abaya or thoub (Almejmaj, Meacham, and Skorinko 2015). Walkability can be improved through open-air activities and better access to retail spaces (Bastian and Napieralski 2016).

2.6.5 Integrated Impact of Cultural and Climatic Constraints on Pedestrian Behavior

Climatically, the harsh summer conditions and heat island effects in the region demand a rethinking of comfort in pedestrian infrastructure. Beyond passive shading, walkways require thermal mitigation features such as solar-reflective surfaces, wind corridors, green shading, and mist cooling technologies (M. A. Alharthi et al. 2025). This need is particularly acute in coastal cities like Doha or Jeddah, where high humidity compounds thermal stress, or in desert inland cities like Riyadh, where peak temperatures regularly exceed 45°C.

Lastly, national heritage directly informs spatial identity and walkability aesthetics. Traditional architecture, public art, and pedestrian-scale historic elements (e.g., arcades, mashrabiya screens, geometric paving) not only evoke cultural resonance but also contribute to human-scale wayfinding

and sense of place. Walkability audits in GCC cities must therefore include elements of cultural alignment, visual heritage integration, and symbolic accessibility (Romice et al. 2017)(Furlan and Faggion 2017).

The culturally responsive walkability in the GCC region cannot be disentangled from spatial behavior patterns shaped by faith, tradition, and environment. Audit tools and urban design models must therefore be rooted in place-specific practices rather than universal checklists.

3. Conclusion

This paper highlights the multifaceted nature of walkability in GCC city neighborhoods, focusing on commercial streets in central business districts. Walkability encompasses physical, cultural, social, and environmental attributes unique to the GCC. Existing assessment tools often fail to account for local factors, such as privacy regulations, Proximity to mosques, and architectural innovations for microclimate control.

The review identified four primary walkability factors: design, protection, appearance, and feel. These factors are interrelated, combining physical safety measures like pedestrian crossings and lighting with social safety considerations. Comfort stems from physical infrastructure, including benches and shade, alongside cultural infrastructure, such as gendered spaces. Microclimate control is crucial for enhancing walkability in the GCC's hot climate. Strategies like shaded pathways, water features, and reflective surfaces are essential to cooling pedestrian areas. However, the cultural context, including gender segregation and mosque access, significantly influences walkability and requires tailored assessment tools.

The study calls for culture-specific walkability audits integrating social, cultural, and environmental factors. It emphasizes the need for climate-responsive urban design and participatory decision-making to create walkable urban environments, improve quality of life, and accommodate diverse users in GCC cities. Further research should refine these tools to align with the region's unique context.

The findings of this review have significant policy implications. The proposed GCC-specific walkability audit tool can serve as a practical implementation framework for municipal authorities, urban planners, and public space agencies. For example, the tool may be integrated into ongoing street redesign programs, sustainability rating systems, and urban mobility plans. Moreover, the audit framework aligns directly with broader regional policy objectives, including Saudi Vision 2030, Qatar National Vision 2030, and Dubai Urban Master Plan 2040, all of which emphasize inclusive, livable, and sustainable urban growth. By adopting this tool as part of routine street evaluations, municipalities can benchmark pedestrian infrastructure quality, prioritize investment in underserved areas, and promote equity in public space access. To enhance its effectiveness, a pilot implementation phase involving public engagement and cross-sectoral collaboration is recommended in selected central commercial zones. This will allow for iterative refinement and ensure alignment with local planning systems and cultural expectations.

Particular emphasis should be placed on inclusivity audits, which evaluate the urban environment's responsiveness to the needs of women, children, the elderly, and persons with disabilities. These audit items, ranging from shaded walkways to step-free access, should be embedded as non-negotiable elements in region-specific assessment tools.

3.1 Toward a GCC-Specific Walkability Audit Framework

Based on the review of 93 walkability factors, this study proposes a prototype structure for a GCC-specific walkability audit tool that can be operationalized by urban planners and municipalities. The tool prioritizes elements based on three guiding principles: climate responsiveness, cultural alignment, and urban function.

The factors are grouped into four domains:

1. Functional Infrastructure (e.g., pedestrian continuity, crossing points)
2. Safety & Protection (e.g., lighting, traffic calming, gender-sensitive space)
3. Comfort & Climate Adaptation (e.g., shaded seating, misting devices, thermal comfort)
4. Aesthetic & Cultural Integration (e.g., heritage facades, mosque accessibility, landscaping)

Each factor can be assigned a weight (1–5 scale) based on its criticality to GCC conditions. For example, "presence of shaded canopies" and "proximity to religious amenities" may receive the highest scores due to cultural and climate importance. Optional elements, such as decorative elements or public art, may be weighted lower but still included for a holistic evaluation.

The audit process can be implemented through a 3-level scoring system:

– Essential: Critical for compliance (must-have for base walkability)

– Recommended: Enhances user experience and inclusivity

– Optional: Adds visual or sensory quality, not required for functionality

A preliminary checklist template has also been drafted for further development in applied studies. This tool can be piloted through participatory field assessments in selected GCC cities and refined based on feedback. Such a framework allows for local contextualization while maintaining methodological rigor and replicability across the region.

Future work should focus on validating the tool in field settings, involving diverse users (e.g., elderly, women, children, disabled individuals) and evaluating its reliability and impact on urban policy integration.

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أداة تدقيق قابلية المشي للشوارع التجارية في المناطق المركزية لمدن دول مجلس التعاون الخليجي: مراجعة نطاقية

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المستخلص. تُعدّ قابلية المشي قضيةً بالغة الأهمية. هناك عدة طرق، إلا أن أداة تدقيق قابلية المشي تُعد من أكثرها فعالية. تُقدم هذه الورقة مراجعةً للأدبيات المتعلقة بأدوات تدقيق قابلية المشي التي يُمكن تطبيقها على الشوارع التجارية في المناطق المركزية لمدن دول مجلس التعاون الخليجي. تُسلّط هذه الورقة الضوء على جوانب مهمة لقابلية المشي في المناطق الحضرية، بما في ذلك الوظيفة والسلامة والجماليات والراحة والسياق وإمكانية التطبيق في مختلف المواقع الحضرية. تستخدم هذه الدراسة تقنية PRISMA لتصفية ومراجعة ٣٠ ورقة بحثية سياقية، وتصنيف عوامل قابلية المشي إلى أربعة مجالات، مع مراعاة العوامل الثقافية والمناخية والسياقية المتنوعة في سياق مدن دول مجلس التعاون الخليجي. تقتضي الدراسة توفير أداة تقييم قابلة للتخصيص ومناسبة ثقافيًا لقابلية المشي، من شأنها تعزيز ممارسات التصميم والتخطيط الحضري في منطقة دول مجلس التعاون الخليجي.

الكلمات المفتاحية: قابلية المشي، التخطيط الحضري، مدن دول مجلس التعاون الخليجي، العوامل الثقافية، أداة تدقيق سلامة المشاة، التصميم المستجيب لتغير المناخ، الأماكن العامة.