Arabic translation, cultural adaptation, and pre-testing of neighborhood environment walkability scale for adults-abbreviated (NEWS-A): Arabic NEWS-A

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Background: Improving neighborhood walkability is critical for sustainable and livable urban development and is associated with increased physical activity. The Neighborhood Environment Walkability Scale-Abbreviated (NEWS-A) is a tool for assessing neighborhood walkability among adults. Currently, no Arabic version is available for this important walkability scale.

Objective: To translate the NEWS-A to Arabic, culturally adapt, and pre-test it for adults.

Methods: The NEWS-A was translated and culturally adapted using Cross-cultural Survey Guidelines and then pre-tested using 65 households selected randomly from the neighborhoods of three districts in Riyadh. After answering the survey, 55 participants took part in a semi-structured cognitive interview, which sought their understanding of the words in the Arabic questionnaire, the clarity of each item, and their suggestions for improvement.

Results: Translation and adaptation of NEWS-A to Arabic resulted in adding two items (mosque and healthcare center) to section B of the scale (stores, facilities, and other things in your neighborhood) and one related item to section C (access to services). The total individual items became 57 instead of the original 54 items in the English version. Also, we added "ATM machine" to item 14 (Bank/credit union) in section B. In addition, the overall results of the cognitive interview showed that most of the participants understood the intended meaning of the questionnaire (99.5%). Further, 99.8% of the

respondents stated that the items were not difficult to comprehend, while 100% of the sample indicated that the sentences were comfortable and not sensitive to them.

Conclusion: Translating, adapting, and pre-testing the NEWS-A resulted in retaining all the original items and adding three additional items. The Arabic NEWS-A provides an important tool for future research on neighborhood environment walkability among adults.

Background

The prevalence of non-communicable diseases (NCDs), including cardiovascular disease, type 2 diabetes mellitus, obesity, and cancer, is increasing globally as well as locally in Saudi Arabia (Tyrovolas et al., 2020). It is estimated that 40% of the global NCD burden appears to be related to four modifiable and yet preventable behavioral risk factors, including physical inactivity, smoking, unhealthy diet, and alcohol abuse (World Health Organization, 2009; Lee et al., 2012). It is well recognized that insufficient physical activity (PA) and excessive sedentary behaviors are major risk factors for NCDs (Lee et al., 2012; World Health Organization, 2020), which can lead to premature mortality (Lee et al., 2012; Kyu et al., 2016). However, the benefits of PA in adults and youth are well documented, as regular moderate-to-vigorous PA is positively associated with improved musculoskeletal, cardiovascular, and metabolic health as well as maintenance of a healthy weight and psychological wellbeing (Janssen and LeBlanc, 2010; Lee et al., 2012; World Health Organization, 2019).

In recent decades, Saudi Arabia has witnessed enormous economic growth accompanied by technological transformations (Al-Hazzaa, 2004; Al-Hazzaa, 2018). Subsequently, the trend towards physical inactivity and sedentary behaviors has increased in recent decades among the Saudi population (Al-Hazzaa, 2004; Al-Hazzaa et al., 2011; Al-Hazzaa, 2018; Al-Hazzaa et al., 2021; World Health Survey, 2021; Evenson et al., 2023). This is a matter of particular concern, given that emerging evidence suggests that sedentary behaviors negatively affect health, which is independent of the effects of physical inactivity (Hamilton et al., 2007; Mann et al., 2017). In addition, obesity as a risk factor for NCDs is on the rise in this region. A recent systematic review and meta-analysis on overweight and obesity rates in the countries of the Middle East from 2000 to 2020 indicated that the combined prevalence of overweight and obesity among adults in Saudi Arabia was nearly 57% (Okati-Aliabad et al., 2022). Such negative lifestyle behaviors contributed considerably to a rise in lifestyle-related NCDs in the country (Almahmeed et al., 2012; Musaiger and Al-Hazzaa, 2012; Majeed et al., 2014).

Walkability is defined as the extent to which the built environment is friendly to people, enabling them to walk and travel by foot, leading to health benefits for the residents and increases in the livability of cities (Wang and Yang, 2019; Baobeid et al., 2021). Increasing recognition has been placed on improving walkability in cities through multilevel interventions targeting the built environment and social factors influencing walkability (Farkas et al., 2019; Baobeid et al., 2021). In fact,

evidence has been supporting the association between neighborhood built environments and overall PA among adults (Sallis et al., 2016; Smith et al., 2017). Also, a recent systematic review showed that the built environment is potentially important for enhancing adult walking (Farkas et al., 2019). Specifically, land use and proximity to destinations seem to be significantly associated with transportation walking and walking for any purpose (Farkas et al., 2019). Environmental factors can also be an important local barrier to outdoor walking in Saudi Arabia, as the temperatures during the long summer months can exceed 40°C in most parts of the country (Nash et al., 2021). Moreover, rapid urbanization in the country over the past decades has promoted a higher dependence on motor vehicles and decreased PA opportunities (Nash et al., 2021). Therefore, improving walkability is critical for sustainable and livable urban development in the country (Kamel, 2013; Almahdy, 2020; Baobeid et al., 2021).

Until recently, the cities in the Gulf Cooperation Council countries were facing an urban mobility challenge, as they had a very poor Walkability Index due to the excessive dependence on the private automobile (Kamel, 2013; Almahdy, 2020). Walkability is the ability to safely walk to services and amenities within a reasonable distance from home. Walkability is measured in different ways, however, the most common is using the distance between an address and its amenities through a walkability score. In a study conducted in Jeddah, Saudi Arabia, it was revealed that mosques were the most frequently visited destinations, and that 86% of the criteria determining a walkable neighborhood in Jeddah were attributed to physical environments alone (AlShareef and Aljoufie, 2020). In major cities like Riyadh and Jeddah, rapid urban expansion and population growth have decreased pedestrian opportunities and walkability (Maghrabi, 2019; Alshammari, 2022). However, mapping the pedestrian activity of two informal public walking loops in Riyadh city showed that better urban design qualities had more pedestrian activities (Parashar and Bnayan, 2020). Further, a study conducted in three districts in AlKhobar city, Saudi Arabia, found that about 92% of the respondents indicated walking more if sidewalk walkability was improved (AlQahtany et al., 2021). The most influencing climatic, geographic, social, and cultural factors on walkability were investigated in Riyadh by Almahdy, 2020 (27). The findings indicated that people's awareness of the value and importance of having walkable streets and minimizing the dependence on car transportation was a key driver in creating pedestrian-friendly streets (Almahdy, 2020). Further, Saudi females from Jeddah were found to perceive the proximity and privacy factors as important when visiting urban public open spaces and that public open

spaces often fail to meet the identified needs of such women users (Maghrabi, 2019).

The preceding environmental literature often finds that both perception of neighborhoods and objective measures of communities are important correlates of walking. Therefore, there is a need for an Arabic neighborhood environment walkability scale in order to measure neighborhood characteristics, explore associations with PA, and to track changes over time and impacts on interventions. This is even more important especially when one of the Saudi Vision 2030 objectives calls to improve the Saudi people's quality of life, including the provision for a good quality of urban public open spaces and neighborhood walkability (Sports Boulevard, 2022; Saudi Vision, 2030, 2020). Globally, the Neighborhood Environment Walkability Scale for Adults-abbreviated (NEWS-A) emerged as a tool for assessing environmental walkability among adults (Cerin et al., 2006; Cerin et al., 2009; Cerin et al., 2013). However, a review that compared international methods and selected local walkability factors concluded that the sociocultural and socioeconomic causes of local differences should be considered in walkability assessments (Wang et al., 2022). Indeed, NEWS-A has been translated and adapted for African countries (Oyeyemi et al., 2016), as well as for Chinese seniors (Cerin et al., 2010), Iranian people (Hakimian and Lak, 2016), India (Adlakha et al., 2016), Korea (Kim et al., 2016) Poland (Jaśkiewicz and Besta, 2016), and the Japanese population (Inoue et al., 2009). Therefore, the present research aimed to translate NEWS-A to Arabic, culturally adapt, and pre-test the abbreviated form of NEWS-A for adults, using a random sample of Saudi adults from major districts near the Sports Boulevard project in Riyadh city (Sports Boulevard, 2022). It is also the intent of this study to examine the associations between selected walkability and sociodemographic variables.

Methods

Ethical approval

Ethical approval was obtained from the Institutional Review Board at King Faisal Specialist Hospital and Research Center in Riyadh (RAC #2231033). An informed consent form was obtained from each participating adult. The research procedures were conducted in accordance with the principles expressed in the Declaration of Helsinki.

Participants' selection

Our sample of participants was drawn from the community near the Sports Boulevard project (Sports Boulevard, 2022) in Riyadh. The Sports Boulevard project was recently launched and is part of the Saudi Vision 2030 goal of increasing sports activities in the community (Sports Boulevard, 2022). One of the objectives of Sports Boulevard is to improve the health of nearby residents by providing exercise routes that encourage PA and increase participation in sports. The project features green pedestrian pathways and cycling routes. Figure 1 shows the complete map of the whole Sports Boulevard project that extend over 135 km. However, we included in our study only neighborhoods around part of the Sports Boulevard, which included areas encompass sport/

recreation and entertainment (blue line and part of the yellow line shown in the map extending 7.5 km).

The chosen samples were selected randomly from the neighborhoods of three districts out of the seven districts adjacent to the Sports Boulevard project. They included the following neighborhood areas (districts): Alaqeeq, Sahafah, and Alwadi. They are all adjacent to the parts of Sports Boulevard project that encompass sport/recreation and entertainment areas, which walkability of the neighboring residents might change once the project is completed.

In each district, a household was randomly selected as the first participating sample, and the next selected was the sixth household from the first one until selecting the pre-required sample from each specific district. The trained research assistant knocked on the door of the household and approached the first adult they met with the Arabic version of NEWS-A. The number of household residents needed in the pre-testing phase was chosen as 60 participants, which is considered adequate for this study (Perneger et al., 2015). After answering the survey (Arabic NEWS-A), the participant was asked if he/she would participate in the cognitive interview part later on. Any participant with an illness or disorder that prevents him/her from PA (such as severe heart disease, respiratory disease, or orthopedic problem) was excluded from the sample.

Perceived built environment walkability scale

The NEWS-A scale was previously validated elsewhere (Cerin et al., 2006; Cerin et al., 2009), translated into different languages, and used in 12 countries (Cerin et al., 2013). For the present study, the NEWS-A (Cerin et al., 2006) was translated into Arabic, culturally adapted, and then pre-tested. The NEWS-A comprises eight dimensions with 54 questions. This questionnaire evaluates perceived environmental factors that may influence walking. These include the following dimensions: types of residences in the neighborhood, stores, facilities, and other things in the neighborhood (perception of distance from home to a variety of common destinations), access to services, streets in the neighborhood, places for walking and cycling, neighborhood surroundings/ aesthetics, traffic hazards, safety and crime in the neighborhood, lack of parking, lack of cul-de-sacs, hilliness, and physical barriers (Table 1). The answer choices for the land use mix-diversity and neighborhood recreation facilities were 1–5, 6–10, 11–20, 21–30 min, more than 30 min and do not know/there is not. The option 'do not know' was coded as more than 30 min. All items from the questionnaires related to street connectivity, places for walking, access to services, neighborhood and crime safety, and neighborhood aesthetics were measured using a 4-point Likert scale (strongly disagree, partially disagree, partially agree, and strongly agree).

Translation and cultural adaptation of the NEWS-A

In translating the NEWS-A scale, we adopted the Cross-cultural Survey Guidelines Initiative (Mohler et al., 2016) and the
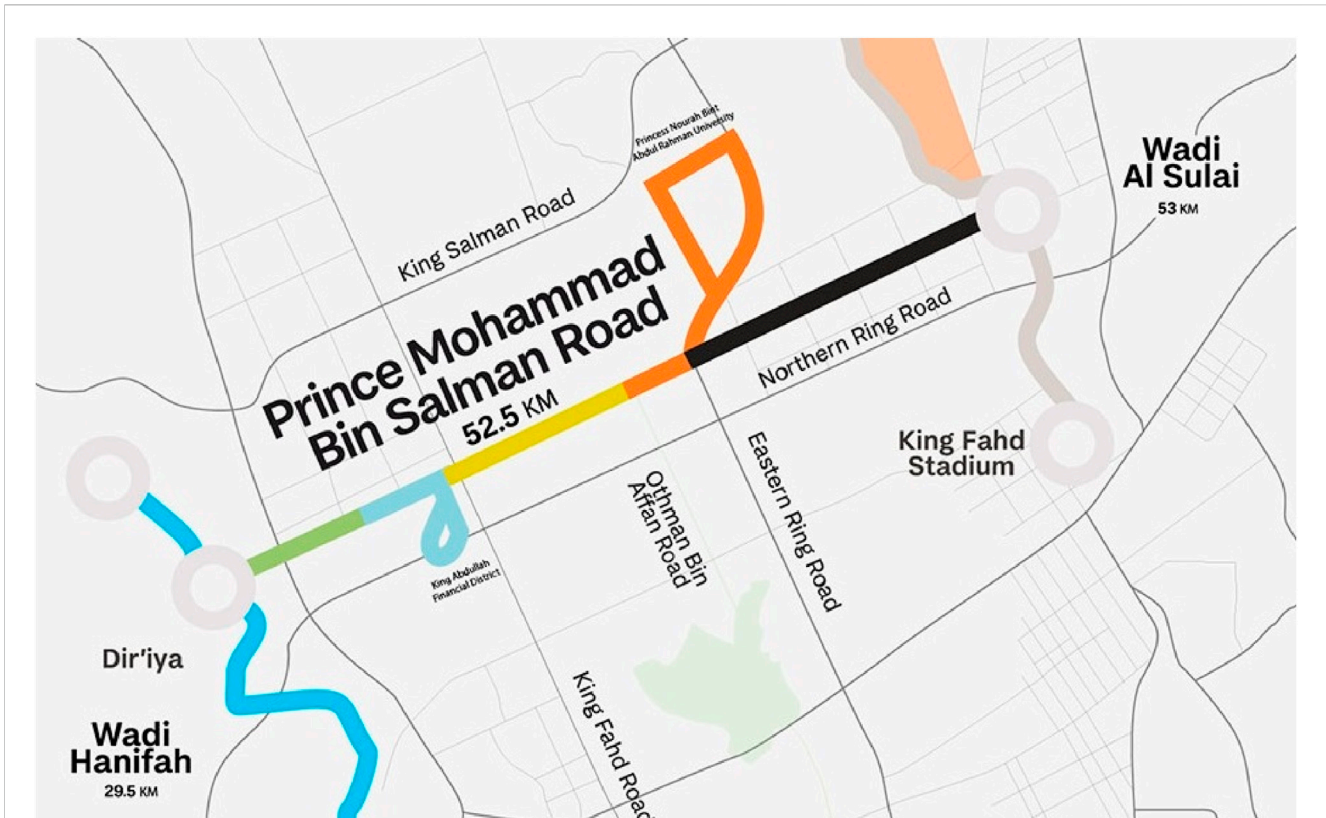
FIGURE 1
Sports Boulevard project showing the whole project that extend over 135 km. However, our study included only neighborhood around part of the Sports Boulevard that include areas encompass sport/recreation and entertainment (blue line and part of the yellow line in the map, extending 7.5 km). Courtesy of thee Sports Boulevard (https://sportsboulevard.sa/en/our-districts).

TABLE 1 The dimensions and the number of items of the English and Arabic NEWS-A.

Domains	Number of items	
	English NEWS-A	Arabic NEWS-A
A- Types of residences in your neighborhood	6	6
B- Stores, facilities, and other things in your neighborhood	23	25
C- Access to services	3	4
D- Streets in my neighborhood	2	2
E– Places for walking and cycling	6	6
F- Neighborhood surroundings/aesthetics	4	4
G- Traffic hazards	3	3
H- Crime	3	3
I- Lack of parking	1	1
I- Lack of cul-de-sac	1	1
I- Hilliness	1	1
I- Physical barriers	1	1
Total items	54	57
Total items	54	57

International Test Commission Guidelines for Translating and Adapting Tests (International Test Commission Guidelines for Translating and Adapting Tests Second Edition, 2018). Two authors, who both have PhD degrees, are bi-lingual and familiar with the topic produced initial, parallel, and independent full translations of the questionnaire. Then, they reviewed the two versions of the translated questionnaire and made some adjustments. Next, the translated documents were reviewed by four external assessors (experts who had previous experience in translating questionnaires, one with a background in English-Arabic translation, another one specializing in urban planning, and the remaining two experts were in PA science). The expert reviewers were asked to examine the semantic, conceptual, and experiential equivalences. They commented on the translation, met with the original translators, and reached an agreement on the final version of the translated questionnaire. We did not do a back-translation step, as many experts do not currently recommend such a procedure and argue that the comparisons of an original document and a back-translated version offer only inadequate and potentially misleading insight into the quality of the target language text (Harkness et al., 2010; Mohler et al., 2016; Behr, 2017; International Test Commission Guidelines for Translating and Adapting Tests Second Edition, 2018).

Pre-testing and cognitive interview of the translated NEWS-A

The translated scales underwent pre-testing using 65 adult households. The aim was to improve the primary questionnaire and, ultimately, the response rate. It was intended to ensure that respondents could comprehend the questionnaire items and determine whether rewording or restructuring was needed. Respondents were provided with the questionnaire and asked to complete it without interruption or asking for clarification. Within 2 weeks after completing the translated NEWS-A survey, a cognitive interview through the phone with verbal probing was conducted on clarity and understanding of the questionnaire items and whether a rewording of any question was needed? Cognitive interview allows for problematic issues to be probed in depth and can identify terms not well understood by adult participants (Beatty and Willis, 2007; Willis and Artino, 2013). The translated NEWS-A was administered in semi-structured cognitive interviews using interviews by phone for 55 participants of those who already answered the questionnaire earlier. The interview sought their understanding of the words in the Arabic questionnaire, the clarity of each item and response options, and their suggestions for improvement. The participants were asked if any question made them uncomfortable and if any relevant environmental/social attribute in the local context was not included in the questionnaire. All participants were encouraged to express their thoughts while responding to the items.

Demographics and socioeconomic status

Age, sex, self-reported height (cm) and weight (kg), education status, monthly family income, and type of housing were collected from the participants. Body mass index (BMI) was calculated as the ratio of weight in kilograms by the height squared in meters (kg/m^2). To classify BMI data, we used the World Health Organization standards designate below 25 kg/m^2 as non-overweight/non-obesity status and equal or above 25 kg/m^2 as overweight/obesity (World Health Organization WHO, 2000).

Data and statistical analysis

After checking and cleaning the data, they were analyzed using the IBM-SPSS software, version 22 (Chicago, IL, United States). The normality of the distribution in continuous variables was examined using histograms. Mean and standard deviation (SD) were reported for continuous variables and percentages for categorical variables. Frequencies of answers to the walkability scale were tested using the Chi-Square test. In addition, we computed the following walkability scores according to the instructions provided by the original instrument (Saelens et al., 2003; Cerin et al., 2006), as the letters A, B, C, D, E, F, G, H, and I represent the domains within the NEWS-A:

- Residential density = A1 + (12 * A2) + (10 * A3) + (25 * A4) + (50 * A5) + (75 * A6);
- Land-use mix–diversity = (B1 + B2+ B3 +B4+ B5+ B6 +B7 + B8+ B9 +B10 + B11 + B12 + B13 + B14 + B15 + B16 + B17 + B18 + B19 + B20 + B21 + B22 + B23 + B24 + B25)/25;
- Land use mix-access = (C1 + C2 + C3)/3;
- Street connectivity = (D1 + D2)/2;
- Infrastructure and safety = (E1 + E2 + E_Q3 + E_Q4 + E_Q5 + E_Q6)/6;
- Aesthetics = (F1 + F2 + F3 + F4)/4;
- Traffic hazards = (G1 + 5 - G2 + G3)/3;
- Crime = (H1 + H2 + H3)/3;
- Lack of parking = I 1;
- Lack of Cul-de-Sac = I 2;
- Hilliness = I 3;
- Physical barriers = I 4

We also tested walkability scores against socioeconomic status using one-way ANOVA with the Bonferroni *post hoc* test. Spearman-Rho correlation coefficients were used to evaluate the relationship between variables. The level of significance was set at a value of ≤0.05.

Results

Demographics

As part of the Arabic translation and cultural adaptation of NEWS-A, we added two items to section B of the scale (stores, facilities, and other things in your neighborhood). Therefore, the total number of items in this domain of the Arabic version of the scale was 25 instead of 23 items in the original English version. These additional items included the mosque and healthcare center. Also, we added "ATM machine" to item 14 in domain B (bank/credit union/ATM machine). Another item in domain C was also added as follows: "The mosque is within walking distance from my

residence." This is because Muslims in Saudi Arabia regularly go (mostly walking) to the nearby mosque to perform daily prayers. Finally, the Arabic NEWS-A instrument comprises 57 individual items compared to 54 in the English version of the NEWS-A scale (Supplementary Appendix SA1).

A total of 65 participants completed the NEWS-A survey, of which 55 heads of household successfully finished the cognitive interviews (84.6% of the total). Table 2 shows the descriptive characteristics of the participants who completed the NEWS-A form. Their ages ranged from 18 to 56 years, with a mean age of 34.2 years. Most of those who responded to the survey were males (98.5%), as it is customary in Saudi Arabia to have males usually responding to the door ring when at home. The averages of reported weight and height were 79.5 kg and 172.7 cm, with a mean BMI of 26.6 (5.9) kg/m^2, ranging from 19.0 to 38.9. The proportion of the participants with overweight or obesity was 61.5%. The majority of the sample (93.8%) live in apartments. 46.2% of respondents held a college degree or higher equivalent. The low-income group (less than 2660 US$ per month) represented 23.1%, while 20.1% of respondents had a monthly income exceeding 5300 US$.

Responses to the Arabic NEWS-A survey

Results of participant responses to domain A (types of residences in your neighborhood) of the NEWS-A are presented in Table 3. Participants perceived their immediate neighborhoods as having mostly (47.7%) or all (1.5%) detached single-family residences and apartments or condos 1-3 stories (58.5% most and 15.4% all), while many of the respondents perceived their immediate neighborhoods as lacking apartments or condos 7–12 stories (83.1%) or apartments or condos more than 13 stories (87.7%). Table 4 displays that the most common stores and facilities within 1–5 min distance from the participant's residence were Mosque (92.3%), convenience/small grocery store (87.7%), fruit/vegetable market (69.2%), laundry/dry cleaners (64.6%), hardware store (55.4%), and salon/barber shop (52.3%). The facilities more distant from their residence were work location or school (83%) and library (87.7%). While the distance to most facilities was identified by participants, 78.5% were unable to report on "libraries" and 46.2% were unable to report on "recreation centers".

Most participants agreed that Mosque followed by stores are within easy walking distance of their homes (Table 5). Also, most participants agreed that the distance between intersections in their neighborhood was short, and there were many alternative routes for getting from place to place in the neighborhood. Additionally, most agree that sidewalks are separated from the road/traffic by parked cars, neighborhood streets are well lit at night, walkers and bikers on the streets in the neighborhood can be easily seen by people in their homes, there are trees along the streets in the neighborhood, and there are many interesting things to look at while walking in the neighborhood, there are trees along the streets in the neighborhood, there are many interesting things to look at while walking in the neighborhood, and that the speed of traffic on most nearby streets is usually slow. Further, the majority of the participants disagree that a high crime rate in the neighborhood exists or it is a reason not to walk within the neighborhood. They also agree that parking is

difficult in local shopping areas, and that the streets in the neighborhood do not have many cul-de-sacs (dead-end streets), but strongly disagree that there are major barriers to walking in the local area.

Additionally, as shown in Table 6, participants seem to score relatively high in terms of street connectivity (3.07), land use mix-access (2.91), and land use mix-diversity (2.84). On the other hand, they scored relatively low in physical barriers (2.45) and crime (1.27). As for residential density, which normally ranges from 173 to 865, they scored low, with a mean score of 274.8 points (31.8% of the possible maximum score).

Responses to the cognitive interviews

We examined the differences in descriptive characteristics between participants taking part in the cognitive interviews (N = 55) and those participant who did not agree to be interviewed (N = 10). No significant ($p > 0.256$) differences were observed between the two groups in age, weight, BMI, house type, education, or family income.

The findings of cognitive interviews using the translated NEWS-A indicated that the items are understood, not difficult, or comfortable (Table 7). Overall, the vast majority of the participants understood the intended meaning of the questionnaire (99.46 (SD: 0.83) %). Also, 99.75% (SD: 0.63) of the respondents stated that the items are not difficult to comprehend, while 100% of the sample indicated that the sentences are comfortable and not embarrassing (meaning they are not sensitive to them). Suggestions and feedback from the respondents were minimal. One participant suggested rewarding the sentence in F3, which states: "There are many attractive natural sights in my neighborhood (such as landscaping, views)" to become: "There are natural scenes in the street of my neighborhood." However, we believe the translated Arabic sentence exactly reflects the original English phrase.

Relationships among study variables

The correlation coefficients between walkability scores and socioeconomic status and BMI among the participants are shown in Table 8. Age correlated significantly and positively with lack of parking ($r = 0.247$, $p = 0.049$). Housing type showed a significant positive ($r = 0.249$, $p = 0.047$) relationship with land use mix-access and a significant negative ($r = - 0.265$, $p = 0.035$) correlation with crime. Also, the level of education shows a significant ($r = - 0.255$, $p = 0.042$) negative correlation with traffic hazards, whereas family income exhibited a significant negative correlation with each infrastructure ($r = - 0.389$, $p = 0.001$) and safety and lack of cul-de-sac ($r = - 0.326$, $p = 0.009$). Additional significant correlations were also observed between subclasses. The most notable ones are the correlations between residential density and crime scores ($r = 0.380$, $p = 0.002$), the street connectivity with infrastructure and safety ($r = 0.268$, $p = 0.032$), traffic hazards and hilliness ($r = 0.518$, $p < 0.001$), and physical barriers and hilliness ($r = 0.254$, $p = 0.043$).

Discussion

The present study aimed to translate the NEWS-A into Arabic, adapt the scale to the local culture, and pre-test the survey using a

TABLE 2 Descriptive characteristics of the pre-tested participants (n = 65).

Item	Units	Value
Age (years)	Mean (SD), and (min-max)	34.2 (7.7), (18–56)
Sex (%)	Male	98.5%
Self-reported body weight (kg)	Mean (SD), and (min-max)	79.5 (13.6), (55–120)
Self-reported body height (cm)	Mean (SD)), and (min-max)	172.7 (5.8), (159–187)
BMI (kg/m²)	Mean (SD), and (min-max)	26.6 (4.2), (19.0–38.9)
Non-overweight/non-obesity	BMI <25 kg/m²	38.5%
Overweight/obesity	BMI ≥25 kg/m²	61.5%
Housing type	Villa	6.2%
	Apartment	93.8%
Education	High school or less (%)	53.8%
	College degree (%)	38.5%
	Postgraduate degree (%)	7.7%
Monthly family Income (Saudi Riyal)[a]	<10,000	23.1%
	10,000–20,000	56.8%
	20,001–30,000	13.9%
	>30,000	6.2%

[a]1 US$ = 3.75 Saudi Riyals.

TABLE 3 Results of participants' responses (%) to domain A (types of residences in your neighborhood) of the neighborhood environment walkability scale-abbreviated (NEWS-A). (n = 65).

Item number (question)	1 None	2 A few	3 Some	4 Most	5 All
A1. How common are detached single-family residences in your immediate neighborhood?	00.0%	15.4%	35.4%	47.7%	1.5%
A2. How common are townhouses or row houses of 1–3 stories in your immediate neighborhood?	3.1%	32.3%	33.8%	26.2%	4.6%
A3. How common are apartments or condos 1–3 stories in your immediate neighborhood?	6.2%	3.1%	16.9%	58.5%	15.4%
A4. How common are apartments or condos 4–6 stories in your immediate neighborhood?	40.0%	36.9%	20.0%	3.1%	00.0%
A5. How common are apartments or condos 7–12 stories in your immediate neighborhood?	83.1%	9.2%	6.2%	1.5%	00.0%
A6. How common are apartments or condos more than 13 stories in your immediate neighborhood?	87.7%	9.2%	00.0%	3.1%	00.0%

random sample of Saudi adults. Cognitive interviews were also conducted with participants of the residential households. The main findings showed that the translation and adaptation of NEWS-A to Arabic resulted in adding two items to section B of the scale (mosque and healthcare center) and one item to section C. So, the total individual items became 57 instead of the original 54 items in the English version. Also, during the translation phase we added "ATM machine" to item 14 in section B to appear as "bank/credit union/ATM machine." In addition, the results of the cognitive interview showed that the majority of the participants understood the intended meaning of the questionnaire (99.46%). Moreover, 99.75% of the respondents stated that the items were not difficult to comprehend, while 100% of the sample indicated that the sentences were comfortable (without sensitivity issues to them).

To evaluate the role of built environments on PA and the risk for NCDs, it is necessary to have built environment measures that are appropriate to the local context, especially as primary prevention of overweight, obesity, inactivity, and sedentary behaviors is still a major public health goal in all the Gulf Cooperation Council countries (Al-Hazzaa, 2022). The current study, for the first time in the Arab countries, performed an Arabic translation, adapted, and pre-tested an important tools (NEWS-A) that can be used in future research on neighborhood environment walkability, built environment, and PA behaviors among adults in the entire region. Using such an essential tool can allow future research to better understand the relationships between obesity and lifestyle behaviors and the interactions with measures of the built environment. The tool will facilitate the development of more effective prevention, intervention, and management strategies for

TABLE 4 Results of participants' responses (%) to domain B (Stores, facilities, and other things in your neighborhood) of the neighborhood environment walkability scale-abbreviated (NEWS-A). The question is: how long would it take to get from your home to the nearest businesses or facilities listed below if you walked to them? (n = 65).

Item number and businesses/ facilities	1–5 min (%)	6–10 min (%)	11–20 min (%)	20–30 min (%)	30+ min	do not know (%)
B1. Convenience/small grocery store	87.7	9.2	1.5	0.0	1.5%	0.0
B2. Supermarket	43.1	29.2	23.1	1.5	1.5%	1.5
B3. Hardware store	55.4	23.1	15.4	4.6	1.5%	0.0
B4. Fruit/vegetable market	69.2	20.0	9.2	1.5	0.%	0.0
B5. Laundry/dry cleaners	64.6	29.2	3.1	3.1	0.0%	0.0
B6. Clothing store	29.2	15.4	29.2	18.5	1.5%	6.2
B7. Post office	4.6	23.1	29.2	13.8	3.1%	26.2
B8. Library	6.2	4.6	1.5	0.0	9.2%	78.5
B9. Elementary school	15.4	26.2	40.0	3.1	0.0%	15.4
B10. Other schools	16.9	21.5	38.5	4.6	0.0%	18.5
B11. Book store	26.2	44.6	15.4	4.6	1.5%	7.7
B12. Fast food restaurant	41.5	44.6	12.3	1.5	0.0%	0.0
B13. Coffee place	49.2	38.5	7.7	3.1	0.0%	1.5
B14. Bank/credit union/ATM machine	44.6	30.8	21.5	1.5	0.0%	1.5
B15. Non-fast food restaurant	44.6	33.8	16.9	4.6	0.0%	0.0
B16. Video store	12.3	15.4	30.8	4.6	1.5%	35.4
B17. Pharmacy/drug store	49.2	38.5	9.2	3.1	0.0%	0.0
B18. Salon/barber shop	52.3	30.8	13.8	3.1	0.0%	0.0
B19. Your job or school	1.5	3.1	6.2	6.2	41.5%	41.5
B20. Bus or train stop	7.7	23.1	26.2	6.2	6.2%	30.8
B21. Park	3.1	27.7	44.6	10.8	0.0%	13.8
B22. Recreation center	6.2	16.9	26.2	3.1	1.5%	46.2
B23. Gym or fitness facility	41.5	30.8	18.5	3.1	1.5%	4.6
B24. Mosque	92.3	6.2	1.5	0.0	0.0%	0.0
B25. Health center	20.0	13.8	38.5	12.3	6.2%	9.2

reducing physical inactivity, sedentary behaviors, and obesity among Saudi adults (Al-Hazzaa, 2018; Sharara et al., 2018; Al-Hazzaa, 2022).

Our goal in the present research was to retain as many items as possible in the original English form of the NEWS-A. This is important to support the possible comparison of results across countries. The mosque and healthcare center were two additional items added to the Arabic-translated version. These are sensible additions, as mosques are usually found in every neighborhood community in the city and are mostly within walking distance from homes. Indeed, a recent local study conducted in the city of Jeddah, Saudi Arabia, found that Mosques were the most frequently visited destinations in the neighborhood (Alshammari, 2022). Adding health centers to facility within the neighborhood is an appropriate thing to do, as the Ministry of Health is developing primary healthcare centers all over major districts within the city,

routine visits to these places are expected to be part of the usual community activities.

Notably, adaptation of NEWS-A in other countries resulted in far more changes to the original English NEWS-A. For example, NEWS-Iran, an adapted version of NEWS-A, added five items from other forms of English NEWS-A, two subscales were significantly shortened, and five new items were added about climate factors and site-specific uses (Hakimian and Lak, 2016). Among Hong Kong Chinese seniors, adapting the NEWS-A version resulted in having 14 subscales and four single items with a total of 76 individual items (Cerin et al., 2010). In addition, NEWS-A Africa had difficulties adapting some items from the original English NEWS-A, resulting in substantial changes to the original items. For example, the concept of time taken to walk to destinations (in stores, facilities, and other things in the neighborhood) was difficult for some adult participants in

TABLE 5 Results of participants' responses (%) to domain C to I of the neighborhood environment walkability scale-abbreviated (NEWS-A). Within walking distance means within a 10–15 min walk from your home. (n = 65).

Item number and statement	1 Strongly disagree	2 Somewhat disagree	3 Somewhat agree	4 Strongly agree
C. Access to services				
C1. Stores are within easy walking distance of my home	3.1%	4.6%	55.4%	36.9%
C2. There are many places to go within easy walking distance of my home	3.1%	10.8%	49.2%	36.9%
C3. It is easy to walk to a transit stop (bus, train) from my home	18.5%	41.5%	35.4%	4.6%
C4. Mosque is within easy walking distance of my home	3.1%	00.0%	10.8%	86.1%
D. Streets in my neighborhood				
D1. The distance between intersections in my neighborhood is usually short (30 m or less)	4.6%	15.4%	63.1%	16.9%
D2. There are many alternative routes for getting from place to place in my neighborhood. (I do not have to go the same way every time.)	4.6%	1.5%	61.5%	32.3%
E. Places for walking and cycling				
E1. There are sidewalks on most of the streets in my neighborhood	6.2%	36.9%	44.6%	12.3%
E2. Sidewalks are separated from the road/traffic in my neighborhood by parked cars	9.2%	27.7%	41.5%	21.5%
E3. There is a grass/dirt strip that separates the streets from the sidewalks in my neighborhood	13.8%	47.7%	24.6%	13.8%
E4. My neighborhood streets are well lit at night	00.0%	1.5%	46.2%	52.3%
E5. Walkers and bikers on the streets in my neighborhood can be easily seen by people in their homes	3.1%	26.2%	50.8%	20.0%
E6. There are crosswalks and pedestrian signals to help walkers cross busy streets in my neighborhood	12.3%	44.6%	35.4%	7.7%
F. Neighborhood surroundings/aesthetics				
F1. There are trees along the streets in my neighborhood	12.3%	29.2%	52.3%	6.2%
F2. There are many interesting things to look at while walking in my neighborhood	18.5%	29.2%	50.8%	1.5%
F3. There are many attractive natural sights in my neighborhood (such as landscaping, views)	21.5%	53.8%	23.1%	1.5%
F4. There are attractive buildings/homes in my neighborhood	20.0%	35.4%	43.1%	1.5%
G. Traffic hazards				
G1. There is so much traffic along nearby streets that it makes it difficult or unpleasant to walk in my neighborhood	4.6%	38.5%	43.1%	13.8%
G2. The speed of traffic on most nearby streets is usually slow (30 mph or less)	3.1%	16.9%	67.7%	12.3%
G3. Most drivers exceed the posted speed limits while driving in my neighborhood	9.2%	47.7%	33.8%	9.2%
H. Crime				
H1. There is a high crime rate in my neighborhood	80.0%	7.7%	6.2%	6.2%
H2. The crime rate in my neighborhood makes it unsafe to go on walks during the day	87.7%	9.2%	3.1%	00.0%
H3. The crime rate in my neighborhood makes it unsafe to go on walks at night	83.1%	7.7%	9.2%	00.0%
I.1 Lack of Parking				
I-1. Parking is difficult in local shopping areas	7.7%	18.5%	61.5%	12.3%

TABLE 5 (*Continued*) Results of participants' responses (%) to domain C to I of the neighborhood environment walkability scale-abbreviated (NEWS-A). Within walking distance means within a 10–15 min walk from your home. (n = 65).

Item number and statement	1 Strongly disagree	2 Somewhat disagree	3 Somewhat agree	4 Strongly agree
I.2 Lack of Cul-de-Sac				
I-2. The streets in my neighborhood do not have many cul-de-sacs (dead-end streets)	10.8%	13.8%	67.7%	7.7%
I.3 Hilliness				
I-3. The streets in my neighborhood are hilly, making my neighborhood difficult to walk in	7.7%	49.2%	33.8%	9.2%
I.4 Physical barriers				
I-4. There are major barriers to walking in my local area that make it hard to get from place to place (for example, freeways, railway lines, rivers)	60.0%	26.2%	7.7%	6.2%

TABLE 6 Results of scoring of the neighborhood environment walkability scale-abbreviated (n = 65).

Subscales/single items	Minimum	Maximum	Mean	SD
Residential Density (A)	176.00	620.00	274.83	82.7
Land Use Mix- Diversity (B)	1.48	4.76	2.84	.63
Land Use Mix- Access (C)	1.00	4.00	2.91	.60
Street Connectivity (D)	1.00	4.00	3.07	.54
Infrastructure and Safety (E)	1.33	3.83	2.76	.51
Aesthetics (F)	1.00	4.00	2.30	.58
Traffic Hazards (G)	1.00	4.00	2.66	.56
Crime (H)	1.00	3.00	1.27	.51
Lack of Parking (I-1)	1.00	4.00	2.78	.76
Lack of Cul-de-Sac (I-2)	1.00	4.00	2.72	.76
Hilliness (I-3)	1.00	4.00	2.45	.77
Physical barriers (I-4)	1.00	4.00	1.60	.88

A, B, C, D, E, F, I-1, and I-2: higher score denotes higher walkability. G, H: I-3, I-4: higher score denotes lower walkability.

South Africa (Oyeyemi et al., 2016). Also, the two sections on the road and walking paths and places for walking, cycling, and playing posed some difficulties to youth from low socioeconomic status areas in Kenya and some participants (adults and youth) in Uganda (Oyeyemi et al., 2016). However, most of the difficult items identified during the cognitive testing of African NEWS were resolved by word changes and the inclusion of a "not applicable" response option (Oyeyemi et al., 2016).

In the present study, participants scored lower scores (1.27 (0.51)) in crime compared with scores (1.95 (0.55)) observed by Korean adults (Kim et al., 2016), indicating more walkability. The relatively low scores in crime domain of the NEWS-A in the present study are not surprising, as Saudi Arabia is ranked with a low crime index, according to Numbeo Crime Index by Country 2023 Mid-Year (Numbeo–Crime index by country, 2023).

Both earlier versions of NEWS and NEWS-A showed good test-retest reliability (ICC = 0.58–0.80) across different studies (Cerin et al., 2006; Cerin et al., 2008; Lee et al., 2012). Indeed, the reliability of similar self-reported physical environmental measures across four domains (access to facilities and destinations, functionality and safety, aesthetics, natural environment) appear to display moderate to high (ICC = 0.40–0.80) reliability coefficients among diverse groups of men and women from the United States (Evenson and McGinn, 2005). The fact that the structure of the NEWS-A was sufficiently valid speaks in favor of the generalizability of the measurement model of the NEWS-A to geographical locations, cultures, and age groups markedly different from those for which the NEWS-A were developed (Cerin et al., 2009). These findings are promising since they support the feasibility of cross-country and age-group comparisons of the influence of the neighborhood environment on walking. In the current study, although Arabic NEWS-A included all original items in the original version of the walkability scale, additional validation research may be needed to establish the generalizability of the Arabic NEWS-A to other Arabic-speaking locations.

TABLE 7 Results of cognitive interviews using the NEWS-A showing the percentage of participants saying that the item as understood, not difficult, or uncomfortable (n = 55).

Item number (question)	Understanding of the item (% clear)	Item difficulty (% not difficult)	Item sensitivity (%) uncomfortable)
A. Types of residences in your neighborhood			
A1. How common are detached single-family residences in your immediate neighborhood?	100%	100%	0.0
A2. How common are townhouses or row houses of 1–3 stories in your immediate neighborhood?	100%	100%	0.0
A3. How common are apartments or condos 1–3 stories in your immediate neighborhood?	98.2%	98.2%	0.0
A4. How common are apartments or condos 4–6 stories in your immediate neighborhood?	100%	100%	0.0
A5. How common are apartments or condos 7–12 stories in your immediate neighborhood?	100%	100%	0.0
A6. How common are apartments or condos more than 13 stories in your immediate neighborhood?	100%	100%	0.0
B. Stores, facilities, and other things in your neighborhood			
B1. Convenience/small grocery store	98.2%	100%	0.0
B2. Supermarket	98.2%	98.2%	0.0
B3. Hardware store	100%	98.2%	0.0
B4. Fruit/vegetable market	100%	100%	0.0
B5. Laundry/dry cleaners	100%	100%	0.0
B6. Clothing store	100%	100%	0.0
B7. Post office	100%	100%	0.0
B8. Library	100%	100%	0.0
B9. Elementary school	100%	100%	0.0
B10. Other schools	100%	100%	0.0
B11. Book store	100%	100%	0.0
B12. Fast food restaurant	100%	100%	0.0
B13. Coffee place	100%	100%	0.0
B14. Bank/credit union/ATM machine	100%	100%	0.0
B15. Non-fast food restaurant	100%	100%	0.0
B16. Video store	100%	100%	0.0
B17. Pharmacy/drug store	100%	100%	0.0
B18. Salon/barber shop	100%	100%	0.0
B19. Your job or school	98.2%	100%	0.0
B20. Bus or train stop	100%	98.2%	0.0
B21. Park	100%	100%	0.0
B22. Recreation center	98.2%	98.2%	0.0
B23. Gym or fitness facility	100%	100%	0.0
B24. Mosque	100%	100%	0.0
B25. Health center	100%	100%	0.0

(Continued on following page)

TABLE 7 (*Continued*) Results of cognitive interviews using the NEWS-A showing the percentage of participants saying that the item as understood, not difficult, or uncomfortable (n = 55).

Item number (question)	Understanding of the item (% clear)	Item difficulty (% not difficult)	Item sensitivity (%) uncomfortable)
C. Access to services			
C1. Stores are within easy walking distance of my home	100%	100%	0.0
C2. There are many places to go within easy walking distance of my home	98.2%	98.2%	0.0
C3. It is easy to walk to a transit stop (bus, train) from my home	98.2%	100%	0.0
C4. Mosque is within easy walking distance of my home	100%	100%	0.0
D. Streets in my neighborhood			
D1. The distance between intersections in my neighborhood is usually short (30 m or less)	98.2%	98.2%	0.0
D2. There are many alternative routes for getting from place to place in my neighborhood. (I do not have to go the same way every time.)	98.2%	100%	0.0
E. Places for walking and cycling			
E1. There are sidewalks on most of the streets in my neighborhood	100%	100%	0.0
E2. Sidewalks are separated from the road/traffic in my neighborhood by parked cars	98.2%	100%	0.0
E3. There is a grass/dirt strip that separates the streets from the sidewalks in my neighborhood	98.2%	98.2%	0.0
E4. My neighborhood streets are well lit at night	100%	100%	0.0
E5. Walkers and bikers on the streets in my neighborhood can be easily seen by people in their homes	98.2%	100%	0.0
E6. There are crosswalks and pedestrian signals to help walkers cross busy streets in my neighborhood	98.2%	100%	0.0
F. Neighborhood surroundings/aesthetics			
F1. There are trees along the streets in my neighborhood	100%	100%	0.0
F2. There are many interesting things to look at while walking in my neighborhood	98.2%	100%	0.0
F3. There are many attractive natural sights in my neighborhood (such as landscaping, views)	100%	100%	0.0
F4. There are attractive buildings/homes in my neighborhood	98.2%	100%	0.0
G. Traffic hazards			
G1. There is so much traffic along nearby streets that it makes it difficult or unpleasant to walk in my neighborhood	100%	100%	0.0
G2. The speed of traffic on most nearby streets is usually slow (30 mph or less)	98.2%	100%	0.0
G3. Most drivers exceed the posted speed limits while driving in my neighborhood	100%	100%	0.0
H. Crime			
H1. There is a high crime rate in my neighborhood	100%	100%	0.0
H2. The crime rate in my neighborhood makes it unsafe to go on walks during the day	100%	100%	0.0
H3. The crime rate in my neighborhood makes it unsafe to go on walks at night	98.2%	100%	0.0

TABLE 7 (*Continued*) Results of cognitive interviews using the NEWS-A showing the percentage of participants saying that the item as understood, not difficult, or uncomfortable (n = 55).

Item number (question)	Understanding of the item (% clear)	Item difficulty (% not difficult)	Item sensitivity (%) uncomfortable)
I. Single items			
I-1. Parking is difficult in local shopping areas	100%	100%	0.0
I-2. The streets in my neighborhood do not have many cul-de-sacs (dead-end streets)	100%	100%	0.0
I-3. The streets in my neighborhood are hilly, making my neighborhood difficult to walk in	100%	100%	0.0
I-4. There are major barriers to walking in my local area that make it hard to get from place to place (for example, freeways, railway lines, rivers)	100%	100%	0.0
Overall mean (SD)	99.46 (0.83) %	99.75 (0.63) %	00.0

NEWS-A: neighborhood environment walkability scale-abbreviated.

TABLE 8 Correlation coefficients between walkability scoring indicators and socioeconomic status and BMI among the participants (n = 65).

Subscales/single items	Age	BMI	Housing type	Education	Income
Residential density (A)	$-0.014\ p = 0.910$	$-0.125\ p = 0.327$	$-0.066\ p = 0.607$	$0.222\ p = 0.078$	$-0.102\ p = 0.423$
Land use mix- diversity (B)	$-0.200\ p = 0.112$	$0.079\ p = 0.533$	$-0.234\ p = 0.063$	$0.027\ p = 0.830$	$0.298\ p = 0.017$
Land use mix- access (C)	$0.059\ p = 0.641$	$-0.077\ p = 0.544$	$0.249\ p = 0.047$	$-0.114\ p = 0.370$	$-0.051\ p = 0.689$
Street connectivity (D)	$-0.083\ p = 0.514$	$0.091\ p = 0.475$	$-0.009\ p = 0.941$	$0.026\ p = 0.837$	$0.137\ p = 0.280$
Infrastructure and safety (E)	$-0.032\ p = 0.804$	$-0.013\ p = 0.917$	$0.219\ p = 0.082$	$-0.051\ p = 0.690$	$-0.389\ p = 0.001$
Aesthetics (F)	$0.205\ p = 0.103$	$-0.122\ p = 0.338$	$0.160\ p = 0.206$	$0.074\ p = 0.562$	$-0.133\ p = 0.294$
Traffic hazards (G)	$0.076\ p = 0.550$	$0.098\ p = 0.440$	$0.195\ p = 0.122$	$-0.255\ p = 0.042$	$-0.173\ p = 0.172$
Crime (H)	$0.120\ p = 0.346$	$-0.041\ p = 0.747$	$-0.265\ p = 0.035$	$0.316\ p = 0.011$	$0.104\ p = 0.412$
Lack of parking (I-1)	$0.247\ p = 0.049$	$0.203\ p = 0.108$	$-0.218\ p = 0.083$	$0.159\ p = 0.209$	$0.054\ p = 0.670$
Lack of Cul-de-Sac (I-2)	$0.185\ p = 0.143$	$-0.045\ p = 0.721$	$0.210\ p = 0.096$	$-0.016\ p = 0.900$	$-0.326\ p = 0.009$
Hilliness (I-3)	$0.029\ p < 0.821$	$0.085\ p < 0.506$	$0.140\ p = 0.268$	$-0.063\ p = 0.621$	$0.050\ p = 0.694$
Physical barriers (I-4)	$-0.091\ p = 0.476$	$-0.108\ p = 0.394$	$-0.008\ p = 0.953$	$-0.087\ p = 0.492$	$-0.042\ p = 0.740$

An activity-friendly environment may increase PA levels and decrease sedentary behavior. In a study where the NEWS-A was used to investigate the associations between socio-demographic characteristics, perceived environment, and objectively measured PA outcomes, it was found that the presence of PA-facilitating characteristics (e.g., aesthetics and destinations within walking distance) among the more advantaged people in the community was associated with less sedentary behavior, more light-intensity PA and more moderate to vigorous-intensity PA (Stappers et al., 2018). An observational epidemiologic study involving 1,085 adults from the United States showed that home and worksite, mixed land use, street connectivity, pedestrian safety, and worksite traffic had the most consistent positive relationships with PA outcomes (Carlson et al., 2018).

Participants in the present study agreed that most items listed in land use mix access (C), such as stores, many places to go, and mosques, are within easy walking distance of home. Also, parks and fitness centers are mostly less than a 20-min walk away. A breadth of research has shown that some built environment domains are associated with varying PA behaviors (Elshahat et al., 2020). Land-use mix diversity was positively related to transport physical activity, while the availability of recreation facilities correlated with increased physical activity during leisure time (Elshahat et al., 2020). Improved safety from crime at night consistently increased total physical activity and walking levels (Elshahat et al., 2020). Moreover, urbanization, the built environment, parks, and green spaces were positively associated with increased PA among older adults in Taiwan (Huang et al., 2018). The association between urban density and changes in PA was longitudinally investigated over 12 years using data from the Australian Diabetes, Obesity and Lifestyle Study (Chandrabose et al., 2021). The finding indicated that increasing population density

through population growth within the existing urban boundary, rather than expanding city limits, could promote PA at the population level (Chandrabose et al., 2021). Also, land use and proximity to destinations seem to be significantly associated with transportation walking and walking for any purpose (Farkas et al., 2019).

The present findings observed several significant correlations. The most noteworthy are the correlations between residential density and crime scores, the street connectivity with infrastructure and safety, traffic hazards and hilliness, and physical barriers and hilliness. However, three earlier cross-validation studies of the original English NEWS did not show any correlation when assessing the presence of dead-ends and hilly streets as physical barriers to walking (Cerin et al., 2006; Cerin et al., 2008; Cerin et al., 2009). However, the Chinese NEWS-A did report high inter-correlations between items measuring physical barriers to walking (Cerin et al., 2010). In the Korean NEWS-A, there were relationships between recreational and commuting walking behaviors and environmental factors (Kim et al., 2016). Also, high correlations were observed among women for the item on street connectivity, as intersection widths negatively influenced walking behaviors (Kim et al., 2016). An international study involving 17 cities in 12 countries demonstrated that walking-for-transport outcomes were significantly associated with perceived residential density, land use mix-access, street connectivity, aesthetics, and safety (Kerr et al., 2016). Also, cycling for transport was significantly correlated with perceived land use mix-access, street connectivity, infrastructure, aesthetics, safety, and perceived distance to destinations (Kerr et al., 2016). Sociocultural and socioeconomic differences may influence neighborhood walkability. A review study that compared international methods and selected local walkability factors concluded that the local sociocultural and socioeconomic variability should be well taken in walkability assessments (Wang et al., 2022). Findings from the present study indicated a significant correlation between infrastructure and safety and family income.

Strengths and limitations

The present study has some strengths and limitations. First, we used a random sample of residential households and provided, for the first time in this region, an Arabic-translated and culturally adapted version of the NEWS-A that can be used to assess neighborhood walkability over the entire Arabic-speaking region. Another strength of the present study is that it retains all the items included in the original English NEWS-A. This aspect of the study allows comparisons of the findings across countries.

The first limitation of this study is that the pre-testing of the translated NEWS-A did not include respondents over 60 years of age, so generalizability of the current finding to older individuals above 65 should be approach with caution. Second, since only one female responded to the NEWS-A questionnaire form, we could not analyze the data based on sex. Therefore, it is recommended to include more females in future studies. Third, the sample was of random households but not a true random sample of adults within the household. Forth, test-retest reliability and validity were not assessed in this population. Nevertheless, such

psychometric properties of Arabic NEWS-A may be conducted in future work.

Conclusion

The Arabic translation and cultural adaptation of the NEWS-A resulted in retaining all of the original items and adding three more items. Participants seem to score relatively high in street connectivity, land use mix-diversity, and land use mix-access. Encouragingly, they scored somewhat low in physical barriers and crime. Translating, adapting, and pre-testing the NEWS-A provides an important tool for future research on neighborhood environment walkability among adults in the entire region.

Scope statement

The Neighborhood Environment Walkability Scale-Abbreviated (NEWS-A) is an essential tool for assessing neighborhood walkability among adults. Currently, no Arabic version is available for this important walkability scale. This study translated the NEWS-A to Arabic, culturally adapted, and pre-tested it for adults in Saudi Arabia. The NEWS-A was translated and culturally adapted using Cross-cultural Survey Guidelines and then pre-tested using a sample of households selected randomly from the neighborhoods of three districts in Riyadh. The findings showed that translating, adapting, and pre-testing the NEWS-A resulted in retaining all the original items and adding three additional items. The Arabic NEWS-A provides an important tool for future research on neighborhood environment walkability among adults. The manuscript topic appears quite relevant to the journal of Frontiers in Built Environment (section of urban health), as the Neighborhood Environment Walkability Scale is considered an important tool when studying urban neighborhood walkability and health. Publishing the findings of the translation, adaptation, and pre-testing of the NEWS in this journal will enable researchers in the entire Arabic countries to utilize this essential walkability scale for future urban walkability research.

Data availability statement

All data generated or analyzed during this study are included in this published article. Any additional data will be available from the corresponding author upon reasonable request.

Ethics statement

The studies involving humans were approved by the Institutional Review Board, King Faisal Specialist Hospital Research Center, Riyadh, Saudi Arabia. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

HA-H: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Resources, Supervision, Writing–original draft, Writing–review and editing. MA: Data curation, Investigation, Methodology, Resources, Supervision, Writing–review and editing. RFA: Investigation, Methodology, Resources, Writing–review and editing. RSA: Data curation, Investigation, Methodology, Resources, Writing–review and editing. SR: Investigation, Methodology, Project administration, Resources, Writing–review and editing. VC: Investigation, Methodology, Resources, Writing–review and editing. KE: Investigation, Methodology, Resources, Writing–review and editing, SA: Funding acquisition, Investigation, Methodology, Resources, Writing–review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fbuil.2024.1426705/full#supplementary-material

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