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GENDER AND GREEN SPACES: A MIXED-METHOD EXPLORATION OF WOMEN'S USAGE OF URBAN GREEN SPACES

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ABSTRACT

Urban Green Spaces (UGSs) are essential parameters in the quality of life of urban dwellers. There are gender disparities found in the usage of UGSs. However, despite the numerous benefits of urban parks, certain groups, particularly women, face challenges in utilizing these spaces fully. The paper presents a review of barriers and challenges faced by women users for formulating the questionnaire and identifying the causes of the barriers and challenges in accessing the UGS in Indian urban settlements. The paper investigates the challenges faced by women in accessing and utilizing green spaces within urban environments through questionnaire survey and a mixed methodology approach. Safety and security, availability of amenities for women, overcrowding, lighting, poor maintenance, time unavailability, and cultural issues are significant barriers to women's access to UGSs. The analysis of variance of the responses among women based on age, education, family size and family income on various factors impacting the access to UGSs highlighted variations in monthly family income impact overcrowding and unavailability of time. The variance in other accessibility factors due to demographic variation remained insignificant. The paper concludes with the need for the inclusive design of UGS catering to the diverse needs and preferences of all stakeholders.

Keywords: Urban Green Spaces; Women; Barriers; ANOVA; Inclusive planning

1. INTRODUCTION

Urban green spaces (UGS) are important part of human habitation and contribute in the Quality of Life (QoL) of urban residents by fulfilling their physical, psychological, social, economic, environment and ecological needs (Wolch et al., 2014) (Štrbac *et al.*, 2023). Pollution reduction (Kiani, Javadiyan and Pasban, 2014), mitigation to Urban Heat Island (Panwar, Agarwal and Devadas, 2018), energy saving in buildings (Karade et al., 2017), lower mortality rates (Shiyu Wan *et al.*, 2022), improvement to physical and mental health(Gascon et al., 2015; Hartig et al., 2014), preservation of local natural, cultural and ecological diversity (Urban greening guidelines 2014 of TCPO), property value are various benefits of UGSs.

Despite the manifold benefits, women encounter barriers in accessing and utilizing urban green spaces, stemming from safety concerns, inadequate amenities, limited transportation options, and societal norms (Chong et al., 2013). Women are less represented and less inclined toward vigorous physical activity within urban parks than men (Cohen et al., 2007). Women prefer aesthetically pleasing and well-maintained green spaces, deriving a higher sense of well-being from them (Veitch et al., 2007) (Tyrväinen et al., 2007). The recreational activities by women are influenced by age group, cultural norms, societal expectations and family responsibilities (Huda Sadrul, 2006). Women use the UGSs for taking their children to urban parks (Kaymaz et al., 2019). There are variations in preferences and expectations of park features based on gender (Cohen et al.,2019). Women favor walking paths, whereas men place greater value on well-kept grass and water features when it comes to engaging in physical activity (Veitch et al., 2007). Women in comparison to men feel insecure in using poorly maintained and isolated areas, this insecurity effect the frequency of usage of urban green spaces (Li *et al.*, 2020). Women have higher preference for safe and secure UGSs (Jorgensen et al., 2002) (Mowen et al., 2005). It is very important to understand the nuances of needs, preferences and barrier of women using the UGSs, considering factors like safety, security, and diverse recreational preferences (Chong et al., 2013).

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This paper explores the complex issue of accessibility to UGSs for women users, highlighting the challenges they encounter and proposing strategies to create more inclusive and equitable green spaces. Such investigations can make a real contribution where very little is known about such a particular subject. The exploration of women's usage of urban green spaces based on age, income, family size, and educational qualification can yield valuable insights which will inform urban planners and policy-maker to create more equitable and accessible green spaces that promote the well-being of all individuals, particularly women.

2.   LITERATURE REVIEW
2.1. Age
Older women value accessibility and safe walking paths however younger women remain interested in active recreation (Sun *et al.*, 2022). Young women priorities UGSs with facilities for active engagement in team sports and opportunities for diverse form of exercise like open gym and running trails (Cohen *et al.*, 2010). Urban Green Spaces contribute in destressing, relaxation and restoration of mental well-being in women and age influence the level of wellbeing and benefits (Dadvand *et al.*, 2016). Older women consider UGSs as social hub therefore require sitting spaces, walking groups or organized social activities which promotes social connections and reduction in feeling of isolation (Jennings, Larson and Yun, 2016) (Krenichyn, 2004). Ease of accessibility to UGSs engage older women for light physical activities and social involvement improving their mental well-being (Maas *et al.*, 2008). With aging in women requirement of mobility and personal safety become major concern which require well maintained paths, benches, lighting and proximity to essential services (Krenichyn, 2004). Shortage of amenities for various age groups discourage usage of UGSs (Moran *et al.*, 2020).

2.2. Family Size
Coordinating transportation and supervising multiple children in urban green spaces is a challenge in large family (Xiao *et al.*, 2017). Lack of facilities for various age groups specifically children discourage mothers using the Urban green Spaces (Moran *et al.*, 2020). Engagement of housewives in different activities for family members restrict their ability to relax and use of Urban Green Spaces (Veitch *et al.*, 2015). Women supervising the family members specifically children in Urban Green spaces avoid large urban green spaces, spaces with potential threat, exposer to crime (Bixler and Floyd, 1997) (Floyd *et al.*, 2011). Associated caregiving responsibility of women to her family influence her visits and frequency to Urban Green Spaces (Garrido-cumbrera and Correa-fernández, 2021). Large family sizes require higher engagement of women in household activities which reduces the time availability for visiting the Urban Green Spaces.

2.3. Family Income
Women prefer more structured and maintained UGSs with amenities and with the increased family income they become more cautious (Sang, Knez and Gunnarsson, 2016). Women with low family income have limited access to UGSs particularly disparities in availability of UGSs (Sun *et al.*, 2022). Affordability of transportation means becomes a barrier in accessing the UGSs. Low-income neighborhoods are discriminated with significantly less urban green spaces in comparison to wealthier areas and lack sufficient funding and resources (Wolch, Byrne and Newell, 2014). Inequalities in access to quality green spaces can lead to higher rates of decreased physical fitness, obesity, and chronic disease (Gordon-larsen *et al.*, 2013). Limited access to Urban Green Spaces deprive lower income women from psychological wellbeing and improved mental health (Bratman *et al.*, 2015). The relation of income and women access to urban green spaces is complex and other factors play important role.

2.4. Educational Qualification
Educated women remain aware with the benefits of Urban Green Spaces, which influence their visits and frequency of using the UGSs (Betram and Rehdanz, 2014). The knowledge on benefits of urban green spaces increase motivation to utilize these spaces (Maas *et al.*, 2008). Increased awareness on environment and ecology leads to purposeful usage of urban green spaces (Lee and Maheswaran, 2010). Women with higher education educational level incorporate visiting UGSs into their routine for exercise, stress reduction and their overall well-being (Mitchell and Popham, 2008). Educational levels influence the choices of activities in Urban Green Spaces and seek more facilities like nature walks, birdwatching, community gardening and yoga in the park (Krenichyn,

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2004). Research suggests a link in education, awareness level and urban green spaces use however limited access can still be a barrier. Cultural background, income, age group and family size can also be contributing factors.

It is imperative to tailor these spaces to meet the specific needs and preferences of women users, considering factors like safety, security, and diverse recreational preferences (Chong et al., 2013). There is literature available on barriers to accessibility in UGSs for women users, however, scanty efforts have been made to check the variation in factors based on age, family income, educational qualifications and family size of women. Based on the available literature the relationship of age, family size, family income, and educational qualification on factors impacting the accessibility of UGSs is not very clear. The authors from literature couldn't get clear answers to the following questions on significant variations in factors impacting the accessibility to UGSs with variation women's age, family income, family size, and educational qualification?

3. METHODOLOGY
Following null hypotheses were formulated to analyze the impact of variation in age, educational qualification, family size and monthly income among the women respondents.

- H1: Regarding the factors influencing women's accessibility, there is no difference in the replies from female respondents according to their monthly family income.

- H2: Regarding the factors influencing women's accessibility, there is no difference in the replies from female respondents according to their age.

- H3: Regarding the factors influencing women's accessibility, there is no difference in the replies from female respondents according to their family size.

- H4: Regarding the factors influencing women's accessibility, there is no difference in the replies from female respondents according to their education qualifications

To check the above-mentioned hypotheses an instrument was formulated based on the systematic review of previous studies by (Braçe et al., 2021a) (Braçe et al., 2021b); (Maas et al., 2006),(Kothencz et al., 2017). The instrument contained four demographic questions on age, family size, family income and educational qualification and nine close ended questions on perception related to the barriers. In many research, the Likert scale is used to gauge respondents' sentiments by asking them if they agree or disagree with a given statement or question (Kothencz et al., 2017).

The female residents of Delhi, Chandigarh, Faridabad, Sonipat, Palwal, Jaipur, Rohtak, and Bahadurgarh were randomly polled by the researchers, who gathered 260 responses. The survey was carried out between January 2023 and May 2023. 248 replies were retained in order to analyze the problems women have when using urban green spaces. Demographic analysis of the 248 responses followed by One-way ANOVA is used to test the relationship between the demographical characteristics of women's and their responses of green space accessibility. Descriptive and mixed method approach is adopted for reaching to the results.

4. RESULTS AND DISCUSSION

4.1. Demography of the respondents
Table 1 displays the survey's general findings on the respondents' demographic profile. The age ranges of the 248 female responders were 0–20, 21–30, 31–40, 41–50, 51–60, and 60+. According to the categorization, 34 (14%) of the respondents were between the ages of 0 and 20, 98 (39%) were between the ages of 21 and 30, 34 (14%) were between the ages of 31 and 40, 42 (17%) were between the ages of 41 and 50, 30 (12%) were between the ages of 51 and 60, and the remaining 10 (4%) were over 60. This implied that the responders are representative of a broad spectrum of consumers across various age groups and that they span all age groups. The classification according to the age of the responders is presented in Figure 1.

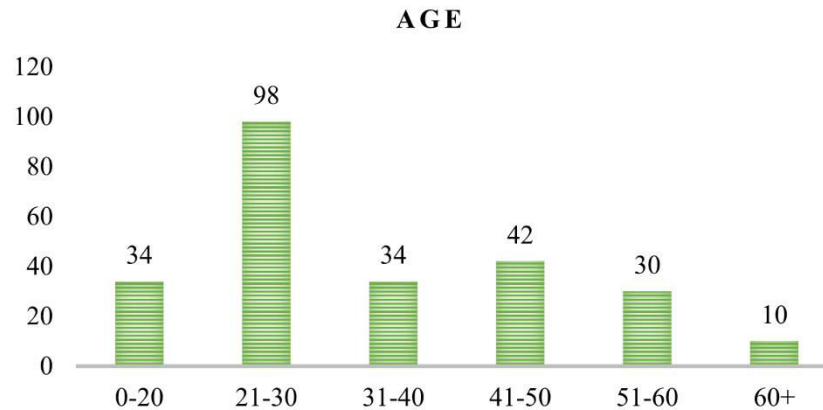*Fig.1: Categorization of the respondents age based on the age group*

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AGE

Table 1: Demographic profile of the women respondents based on age, educational qualification, their family size, and total monthly family income.

S. No.	Demographics	Frequency	Percentage
1	Age (in years)		
	0-20	34	14%
	21-30	98	39%
	31-40	34	14%
	41-50	42	17%
	51-60	30	12%
	60+	10	4%
2	Educational qualification		
	Secondary School		
	Senior Secondary	43	17%
	Graduation	50	20%
	Post-graduation	56	23%
	Doctoral studies	78	31%
		21	9%
3	Family Size		
	1	7	3%
	2	9	3%
	3	24	10%
	4	89	36%
	5	76	36%
	6 or 6+	43	17%
4	Monthly Income		
	<10000	6	2%
	10000-20000	15	6%

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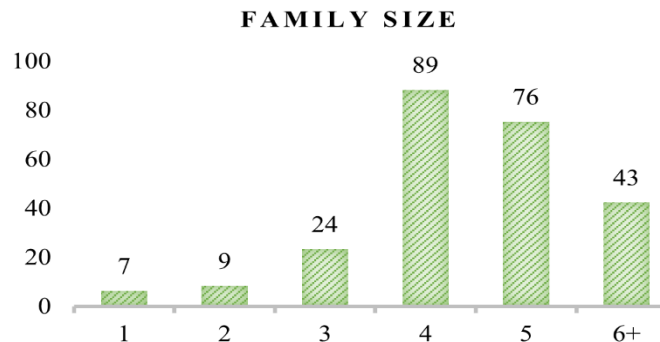| 20000-50000	43	17%
50000-1lakh	74	30%
1lakh-10lakh	89	36%
10lakh	21	9%

With the help of closed-ended questions, the respondents were asked to list their highest level of education, which included graduation from secondary school, senior secondary school, postgraduation, and PhD study. From the enquired women, 56 (23%) had completed their graduation, 78 (31%) had a post-graduate degree, 21 (9%) were enrolled in or had finished their doctoral programme, 50 (20%) had completed senior secondary school, and 43 (17%) had only completed secondary school. The findings demonstrate that the female respondents indicate a more educated population and have a greater range of educational backgrounds. Figure 2 displays the survey results on the respondents' level of education.

Fig 2: Categorization of the respondents based on their educational qualifications
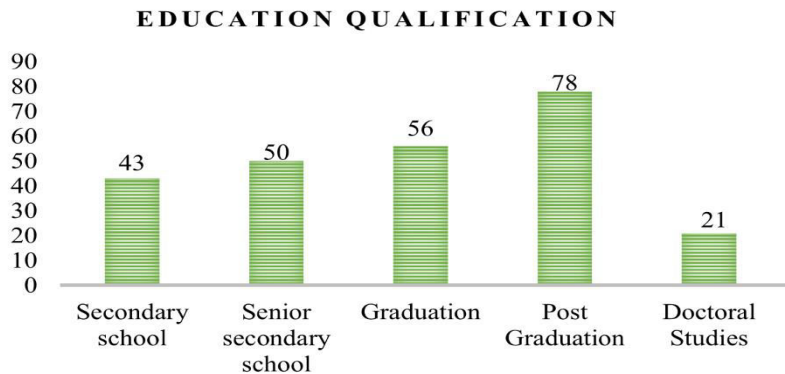
The female respondents were asked about their family size in classes 1, 2, 3, 5, 6, or more because they remain involved in larger families. The data indicates that 89 (36%) of the respondents belonged to a family with four people, 76 (36%) to a family with five members, 43 (17%) to a family of six plus, 24 (10%) to a family of three members, 9 (3%) to a family of two members, and 3% of the female respondents are single and do not have a family. The results indicate that a wide range of family sizes were represented in the poll. Figure 3 displays the categories of respondents according to the size of their families.

Figure 3: Categories of the respondents based on their family size

The women respondents were enquired about their total family income in categories of <10000, 10000-20000, 20000-50000, 50000-1Lakh, 1 Lakh to 10 Lakh, and 10 Lakh plus to include all economic classes of the society for their participation in the survey. The results of the respondents indicate the approximate monthly income of all

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the family members of respondents (Figure 4). 89 (36%) people lay in the group of 1 to 10 lakh income, 74 (30%) had 50,000 to 1 lakh income, 43(17%) had 20,000 to 50,000 thousand, 21 (9%) belonged to the group of 10 lakhs income, whereas 15 (6%) had 10,000 to 20,000, and the remaining 6 (2%) came from the group of less than 10,000. The distribution of respondents among the different economic classes shows that women respondents are representatives of all economic classes.

Figure 4: Categories of the respondents based on their income level

INCOME LEVEL
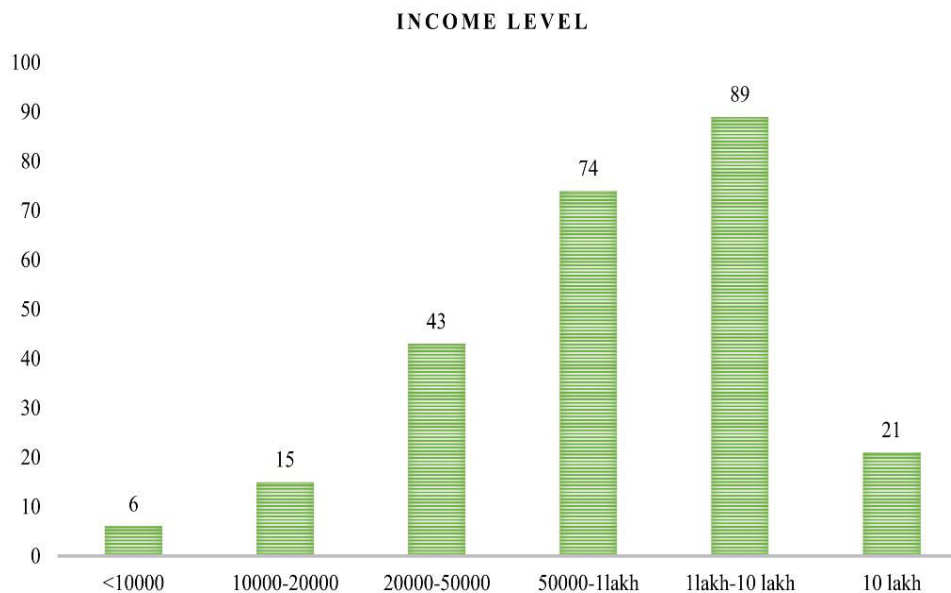
4.2. Descriptive analysis of the responses

The women respondents were enquired about the factors influencing their decision on usage of urban green spaces. Literature review pointed out that safety and security, quality of green spaces, lighting facility, facilities for all stakeholders, overcrowding, poor maintenance, cultural issues, unavailability of time, and history of intolerant event (case of eve teasing, harassment, and molestation in the green spaces) remain major concern among female for accessing the urban green spaces. The overall results of the abovementioned concerns are presented in Table 2. The quality of green spaces has a relatively high mean (4.00), indicating that, on average, respondents perceive the quality of green spaces positively. The negative skewness (-1.064) suggests that the distribution may be slightly skewed to the left, indicating that a few respondents rated the quality much lower than the average. The mean score for safety and security is also high (3.98), suggesting an overall positive perception. The negative skewness (-0.963) implies a slight leftward skewed. The mean for lighting facilities (3.32) is lower than other factors with the skewness (-.0186) and kurtosis (-0.695) values. The mean score (3.54) of facilities for women stakeholders suggests a moderately positive perception of facilities for all stakeholders. The skewness (-0.581) indicates a slightly negatively skewed distribution. The mean score for overcrowding is 3.92, indicating a negative perception of overcrowding with skewness (-0.908), kurtosis (0.652) and a standard deviation of 0.997. The mean (3.37) suggests a moderately negative perception of poor maintenance, with the skewness value (-0.466), kurtosis value (-0.564) and standard deviation (1.170). The mean score of cultural issues is 3.28, the skewness value is -0.241, the kurtosis value is -0.528, and the standard deviation is 1.091. The mean score for time unavailable (4.06) is relatively high, and the skewness and kurtosis values are -1.131 and 1.237, respectively. The mean of the history of intolerant events suggests a moderately negative perception of the history of intolerant events.

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Table 2: Results of descriptive statistics for various constructs of the instrument used in the Study.

Descriptive Statistics	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Quality of Green Spaces	248	4	1	5	4.00	1.034	-1.064	.155	.798	.308
Safety and Security	248	4	1	5	3.98	1.057	-.963	.155	.452	.308
Lighting Facilities	248	4	1	5	3.32	1.105	-.186	.155	-.695	.308
Facilities for all Stakeholders	248	4	1	5	3.54	1.029	-.581	.155	.018	.308
Overcrowding	248	4	1	5	3.92	.997	-.908	.155	.652	.308
Poor Maintenance	248	4	1	5	3.37	1.170	-.466	.155	-.564	.308
Cultural Issues	248	4	1	5	3.28	1.091	-.241	.155	-.528	.308
Time not Available	248	4	1	5	4.06	.982	-1.131	.155	1.237	.308
History of intolerant events	248	4	1	5	3.38	1.114	-.252	.155	-.597	.308
Valid N (listwise)	248									

The women's opinion on the quality of green space being one of the influencing factors of green space usage is presented in Fig 5. 93 women highly agreed with the statement, whereas 92 (37%) respondents agreed, 12 (5%) disagreed, 9 (4%) responded the option of highly disagreed, and the remaining 42 (17%) people were neutral in the response. This shows that most of the women either agree or highly agree that quality of green spaces impacted their usage of urban green spaces.

Fig. 5: Women respondent's opinion on the quality of green space being one of the influencing factors of green space usage

QUALITY OF GREEN SPACES

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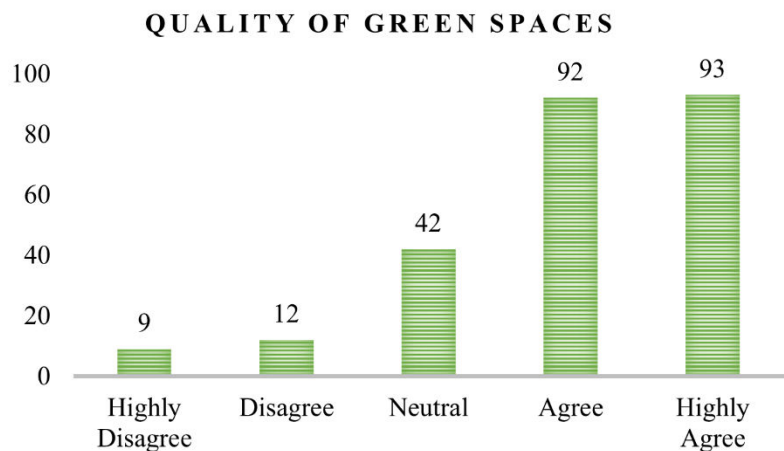## *International Journal of Applied Engineering & Technology*

Figure 6 displays the comments from the female respondents on their perceptions of security and safety as influencing factors when using green spaces. Out of the 248 responders, 80 (32%) agreed, 97 (39%) strongly agreed, 12 (5%) disagreed, 9 (4%) strongly disagreed, and 50 (20%) were neutral about safety and security affect using green spaces. According to their responses, the majority of women think that increasing green space accessibility requires adequate safety and security.

Fig. 6: Opinion of women respondents on safety and security being influencing factors in the use of green spaces
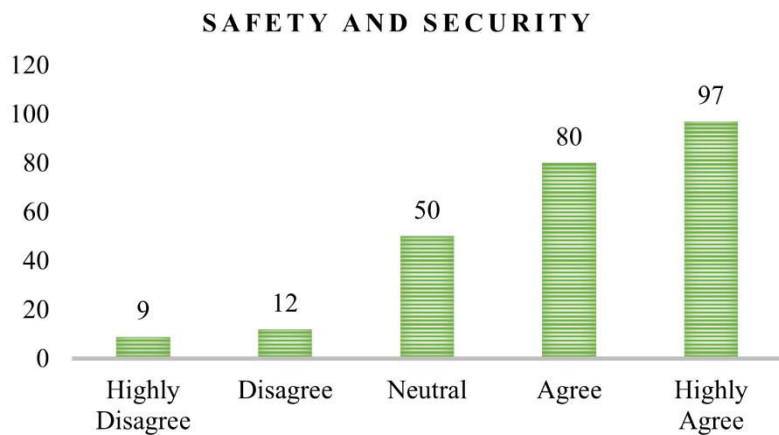

Fig. 7 presents the opinions of female respondents on lighting as a deciding factor while using urban green spaces. This pie chart shows that 39 (16%) highly agreed, 46 (19%) disagreed, 13 (5%) highly disagreed, and 77 (31%) neutral respondents believed that lighting facilities impact the use of green spaces. It shows that the majority of participants strongly feel that properly lit green areas encourage visitors to use them. Since most women use green spaces exclusively during the day, the replies might be dispersed.

Fig 7: The responses of female respondents regarding lighting being decision making factor in usage of urban green spaces
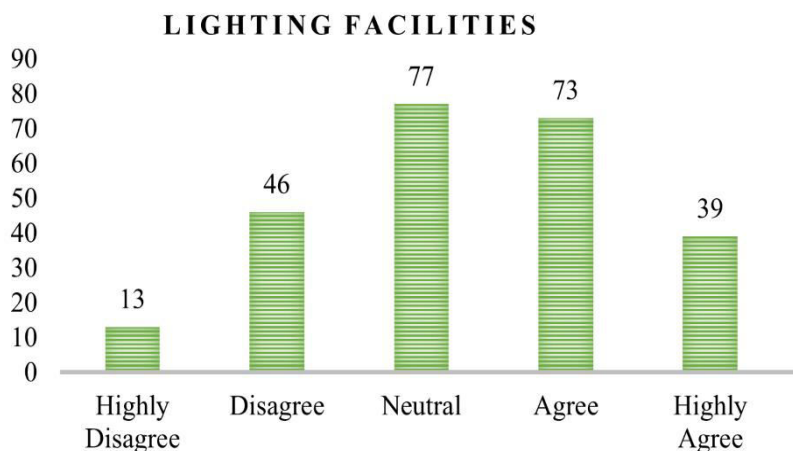

Fig. 8 presents the views of women respondents regarding how the amenities for women stakeholders impact the accessibility of green spaces. 99 respondents agreed to the enquired statement, twelve (5%) strongly disagreed, forty-one (17%) strongly agreed, and seventy-nine (29%) were neutral towards the statement. It shows that most responders agreed that women's amenities impact their use and access to green spaces.

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Fig. 8: Women respondents views on the facilities for women stakeholders affects the accessibility of green spaces

FACILITIES FOR STAKEHOLDERS

Women respondents views on overcrowding affects their decision on accessibility of green spaces is presented in Figure 9. 8 (3%) respondents highly agreed with the statement, whereas 98 (40%) females agreed, 11 (4%) disagreed, 8 (3%) highly disagreed, and the remaining 52 (21%) women were neutral in the response. So, as per the responses, overcrowding turned out to be the most perceived barrier to green space accessibility.

Fig. 9: Women respondents views on overcrowding affects their decision on accessibility of green spaces
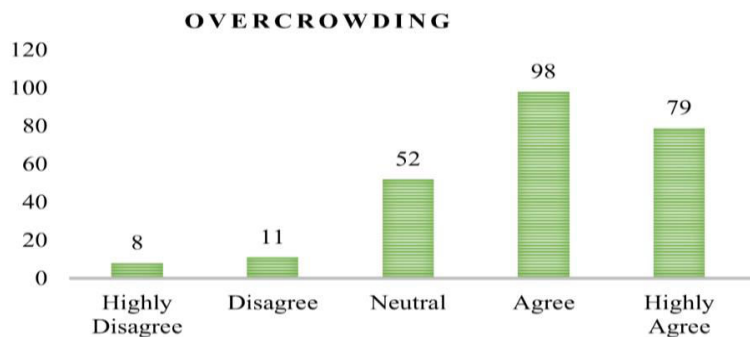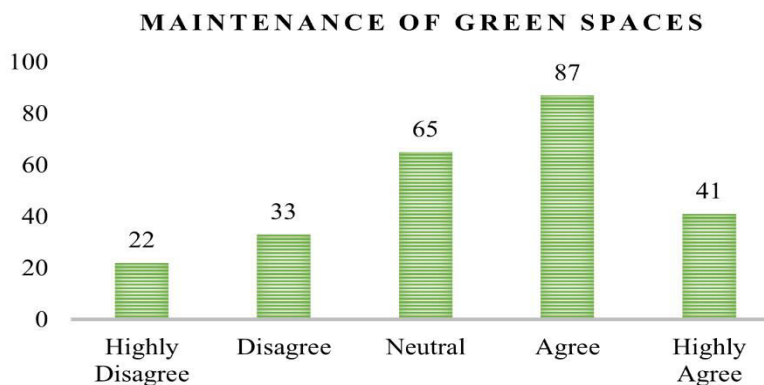

OVERCROWDING

Figure 10 shows the women respondents' view on the poor maintenance of the green space as a restricting factor to green space accessibility. 87 (35%) respondents agreed with the enquired statement, 41 (17%) highly agreed, 33 (13%) disagreed, 22 (9%) highly disagreed, and 65 (26%) were neutral. It indicates that most people agree that this is a highly influencing factor in green space accessibility.

Figure 10: Women respondents views on the poor maintenance of the green space as a restricting factor to green space accessibility

MAINTENANCE OF GREEN SPACES

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The opinions of female respondents on cultural barriers preventing the use of green spaces are shown in Figure 11. 34 (14%) respondents strongly agreed with the statement, compared to 74 (30%) who agreed, 40 (16%) who disagreed, 16 (6%) who responded highly disagreed, and the remaining 84 (34%) women who were undecided about the cultural issues limiting access to green spaces.

Figure 11: Views of female respondents on the question related to cultural issues creating barriers to green space usage
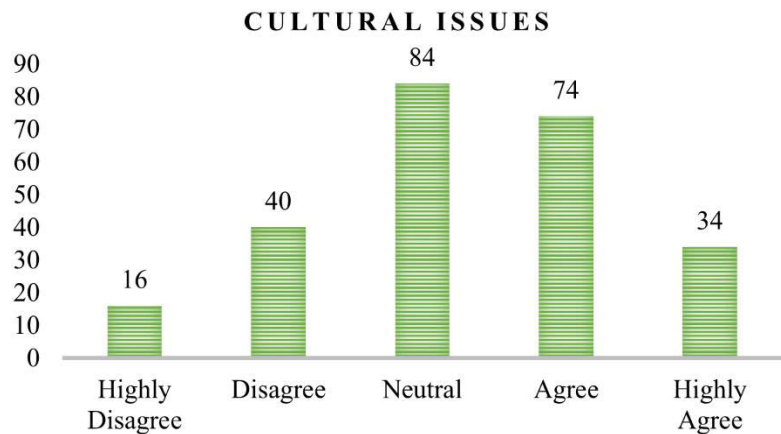

Figure 12 shows responses on time unavailability is seen as an obstruction by female respondents in using green spaces. Based on the responses, it was found that 96 respondents (or 39%) strongly agreed with the statement, while 94 respondents (or 38%) agreed, 7 respondents (or 3% of the sample) disagreed, 3% responded strongly disagreed, and 43 respondents (17%) were unresponsive with their neutral response. The majority of respondents strongly agreed with the question.

Figure 12 Responses on time unavailability among female respondents as a barrier to green space usage.
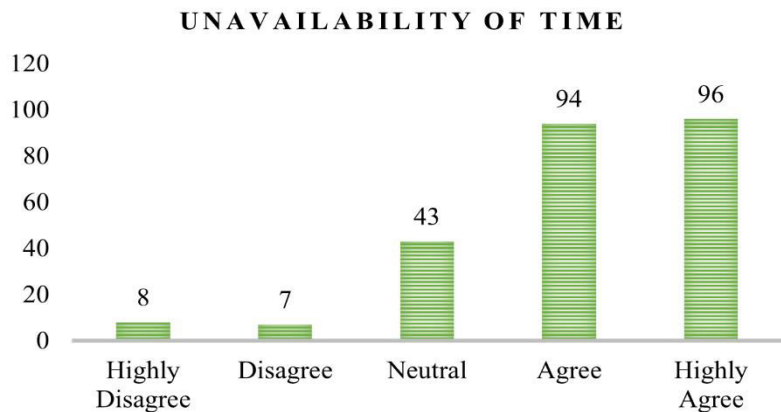

Figure 13 presents women respondent's opinion of their past encounters with intolerant events (case of eve teasing, harassment, and molestation in the green spaces) in green spaces as barriers to green space usage. 45 (18%) women respondents highly agreed with past intolerant events being a barrier to their accessibility to green spaces, whereas 70 (28%) females agreed, 37 (15%) disagreed,14 (6%) people responded highly disagreed, and the remaining 82 (33%) women respondents were neutral in their responses. This shows that most people consider the history of intolerant behaviour in green spaces as one of the barriers to its usage, however, as found in personal discussion most of the female try to hide the intolerance history encountered by them and hesitated in responding the truth.

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Figure 13: Women respondent's opinion of their past encounters with intolerant events (case of eve teasing, harassment, and molestation in the green spaces) in green spaces as barriers to green space usage
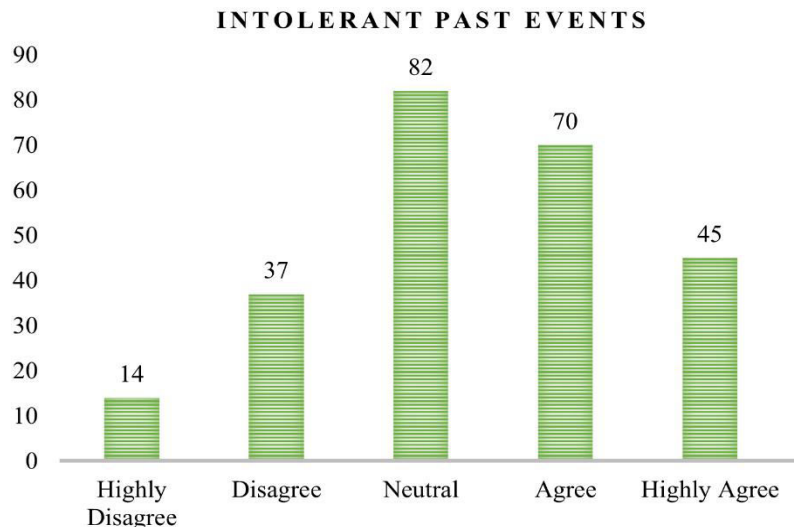
It is inferred from the descriptive survey results that

– The descriptive survey results suggest that most women agree or strongly agree that the quality of urban green spaces influences how often they use these spaces.

– The majority of women respondents think that increasing green space accessibility requires adequate safety and security.

– Female respondents strongly agree that using well-lit conditions in green spaces encourages their usage. Given that most women respondents use green spaces exclusively during the day, the replies might be dispersed.

– Many respondents agreed that women's facilities and amenities influence their opinion towards green space usage.

– Females avoid visiting crowded green spaces and crowding significantly impacts their decision-making regarding green space accessibility.

– It shows that most female respondents believe that maintenance has a major influence on the accessibility of green spaces.

– Urban communities have a more progressive society as a result of higher educational levels, yet cultural concerns continue to influence how urban green space is used. Results reflect this as well, with about 40% of respondents still believing that cultural differences prevent people from using services and another 40% having no opinion at all.

– The use of urban green spaces is hampered by a lack of free time with women visitors and their involvement in domestic and other responsibilities.

– Most of the female respondents say that their previous encounters with unpleasant incidents such as eve teasing, molestation and harassment, in green spaces influence their use of green spaces.

Attention to the above-identified issues, which affect the accessibility and use of green space, will lead to improved women's participation and visitation in urban green spaces.

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4.3. Relationship analysis based on ANOVA

The relationship analysis for testing the framed hypotheses for age, educational qualifications, family size and monthly income are done by using ANOVA. The results related to these variables are presented in their respective heads.

4.3.1. Monthly Income

Quality of Green Spaces with, Between Groups: Sum of Squares = 2.096, df = 5, Mean Square = 0.419, F = 0.387, p = 0.857, indicated no statistically significant difference in the means of the groups. Furthermore, Lighting **Facilities, Facilities for all Stakeholders, Poor Maintenance, Cultural Issues, and History of Intolerant Events also** showed no statistically significant difference in the means of the groups, suggesting no influence of these factors on green space accessibility. **Meanwhile, safety and security with,** Between Groups: Sum of Squares = 13.689, df = 5, Mean Square = 2.738, F = 2.526, p = 0.030, **Overcrowding with** Between Groups: Sum of Squares = 13.732, df = 5, Mean Square = 2.746, F = 2.867, p = 0.016 and **Time Unavailability with** Between Groups: Sum of Squares = 16.572, df = 5, Mean Square = 3.314, F = 3.621, p = 0.004 turned out to **impact women's green space usage as there is** significant differences in the means of the groups. The results of ANNOVA for relationship among monthly income and all responses on theoretical constructs of the instrument are presented in Table 3.

Table 3: The results of ANOVA for relationship among monthly income and all responses on theoretical constructs of the instrument

		Sum of Squares	df	Mean Square	F	Sig.
Quality of Green Spaces	Between Groups	2.096	5	.419	.387	.857
	Within Groups	261.904	242	1.082		
	Total	264.000	247			
Safety and Security	Between Groups	13.689	5	2.738	2.526	.030
	Within Groups	262.247	242	1.084		
	Total	275.935	247			
Lighting Facilities	Between Groups	4.545	5	.909	.740	.594
	Within Groups	297.290	242	1.228		
	Total	301.835	247			
Facilities for all Stakeholders	Between Groups	2.057	5	.411	.384	.860
	Within Groups	259.540	242	1.072		
	Total	261.597	247			
Overcrowding	Between Groups	13.732	5	2.746	2.867	.016
	Within Groups	231.812	242	.958		
	Total	245.544	247			
Poor Maintenance	Between Groups	6.619	5	1.324	.967	.439
	Within Groups	331.252	242	1.369		
	Total	337.871	247			

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Cultural Issues	Between Groups	2.555	5	.511	.424	.832
	Within Groups	291.687	242	1.205		
	Total	294.242	247			
Household engagement	Between Groups	16.572	5	3.314	3.621	.004
	Within Groups	221.521	242	.915		
	Total	238.093	247			
History of intolerant events	Between Groups	3.368	5	.674	.538	.748
	Within Groups	303.241	242	1.253		
	Total	306.609	247			

4.3.2. Family Size

The quality of green spaces, safety and security, facilities for many stakeholders, overcrowding, inadequate maintenance, lack of time, and a history of intolerant behaviour all revealed insignificant relationships with family size. The lack of statistically significant differences in the group means for any of the evaluated variables is indicated by the F-statistics, which are not significant ($p > 0.05$). Based on these findings, the null hypothesis of no group differences cannot be rejected.

4.3.3. Age

The F-statistics are not significant ($p > 0.05$) for any of the assessed variables related to the quality of green spaces, safety and security, lighting facilities, facilities for all stakeholders, overcrowding, poor maintenance, cultural issues, time issues, and past incidents of intolerance, indicating that there are no statistically significant differences in the group means for any of the variables. Based on these findings, the null hypothesis cannot be rejected.

4.3.4. Educational Qualifications

The F-statistics for many variables are not significant ($p > 0.05$), indicating that the group means for those variables do not differ statistically significantly. Conversely, only Overcrowding differs significantly between the groups: Mean Square = 3.115, F = 3.248, p = 0.013; Sum of Squares = 12.460, df = 4.

The findings suggest that:

- Perceptions of the factors influencing women's accessibility vary significantly depending on their monthly family income.

- Among female respondents, there is no difference in the answers of the factors influencing women's accessibility according to their age.

- There is no difference in the answers from female respondents about the factors affecting women's accessibility according to the size of their families.

- There is no difference in the answers from female respondents on the factors affecting women's accessibility according to their level of education.

5. RECOMMENDATIONS

Based on the inferences following are recommended considering the significance of the conclusions drawn from the literature and the mixed method approach used to analyze the survey instrument results:

- Women will use urban green areas more if planned for and maintained inclusively.

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- Maintaining the quality of green spaces is necessary to increase their use by all urban residents.

- Women's participation in urban green areas will rise with the implementation of safety and security measures.

- Adding lighting to urban green spaces will encourage female users to use them at times other than during the day.

- Women's participation in urban green spaces will increase with the proper installation of amenities, regular maintenance, and additional facilities for them.

- Adding urban green spaces can prevent crowding and attract more female users.

- Increased levels of education will reduce cultural constraints on women's use of urban green spaces.

- Fixed working hours and engagement of all users may lead to a rise in the number of women in urban green areas.

Women from all societal segments will participate more if urban green areas are developed and more facilities are available to all economic classes.

6. CONCLUSION

This study extensively examines the challenges and hindrances encountered by women when utilizing parks. Employing a mixed-methods approach, including a questionnaire survey, the research delves into the obstacles faced by women in accessing and making use of green spaces within urban settings. The study identifies safety and security concerns, household responsibilities, cultural barriers, proximity to residence, and the availability of amenities as pivotal factors influencing women's utilization of parks. Furthermore, the research highlights that these impediments differ depending on factors such as women's age, educational background, socio-economic status, marital status, and occupation. These findings underscore the significance of inclusively designing urban parks to cater to the diverse needs and preferences of women.

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