Fringe more than context: perceived quality of life in informal settlements in a developing country: The case of Kabul, Afghanistan

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Abstract

Investigations of the quality and satisfaction of urban life in informal settlements remain largely overlooked in the existing literature especially in developing countries. About one-fifth of Afghanistan population is living in urban areas, however, the trend is changing very fast and the country observes now one of the highest urbanization rates in the world. Two principal reasons for rapid urbanization are the return of Afghan immigrants from other countries after a period of relative peace and domestic rural-urban migration. Kabul, the capital city, is the most attractive destination for all immigrants. Around 80 percent of the population of the city lives in informal and illegal settlements. To investigate the perceived quality of life (QoL) of citizens living in these settlements, a survey was administered to 400 households in informal areas of Kabul. Statistical treatment of the results, including regression and factor analysis, showed a general dissatisfaction with the quality of life components related to transportation, leisure, and governance. Material deprivation regarding basic services (water, energy, etc.) was also widespread. On the other hand, less tangible components such as sense of community and family scored higher. Still, informal settlements constitute a fundamental part of Kabul and authorities should seek to improve quality of life especially in what concerns the provision of urban public goods. The findings of this study attempt to provide basic results for managers, planners and urban policymakers to facilitate a reasonable evaluation of the current state of the city in order to take action in addressing planning problems and achieving urban sustainability.

Keywords: Urban quality of life, Informal settlements, Developing countries, Kabul, Afghanistan.

1. **Introduction**

Urban slums and informal settlements constitute common and challenging problems in developing countries. These settlements play a substantial role in the supply and demand of housing. Therefore, their significance in sheltering the growing urban poor cannot be overstated (Majale, 2008). Urbanization in poor regions of the world has become synonymous with slums and informal settlements (UN Habitat, 2006). Absolute numbers of urban population living in informal settlements has increased about by 90 million between 2000 and 2014 even though the proportion fell from 39 to 30 percent of the total population living in cities (United Nations, 2014). In developing countries 20 to 80 percent of urban citizens live in informal neighborhoods (Aluko & Amidu, 2006 cited in Mensah, 2010). The lack of urban planning and management attentive to human and social needs creates important barriers to improve the quality of life (QoL) and satisfaction of residents. Given the high percentage of poverty and the huge number of people in informal settlements, the QoL in these settlements has become a major issue. Quality of life is noticed as one of the main indicators for sustainable urban development (Baud et al., 2001; Tweed & Sutherland, 2007; Kaklauskas et al., 2018). Therefore, improving QoL in a specific site is in the core consideration of managers and planners (Lotfi & Solaimani, 2009). Improving the QoL in urban areas is no longer a simple matter of bricks and mortar, but, more and more, the fulfillment of human satisfaction with different urban endowments such as transportation, quality of public spaces, land use patterns, building densities, and ease of access for all to basic goods, services and public amenities (Serag El Din et al., 2013).

One of the poorest countries in the world, Afghanistan has begun to experience fundamental socio-economic and political changes after the fall of the Taliban regime. Between 2003 and 2013, urbanization grew by 34 percent (CSOIRA, 2016). Kabul, the capital city, with about 3 million people in 2005, has experienced a growth rate of 17 percent in last two decades. This explosive urban growth has occurred in an uncontrolled fashion, paving the way to informal settlements lacking legal status and municipal acceptance (World Bank, 2006).

Kabul accommodates about 41 percent of the total urban population of Afghanistan, approximately 82 percent of which lives in 55 informal settlements (Samuel Hall Consulting, 2012). Illegal settlements can be found in all parts of Kabul but are mostly located in the southwest districts (Fig. 1). These settlements occupy more than two-third of the residential area and represent about four-fifth of the city population (Collier, Manwaring & Blake, 2018). Population growth in Kabul is outpacing the capacity of the city to provide public facilities and services for the inhabitants and accelerating the process of urban informality . Regular housing provision in the city is too expensive to meet the needs of most citizens. Conventional large-scale public housing programs are unlikely to solve the problem of formal housing shortages in Kabul in the short to medium term. Hence, informal settlements, often considered a degraded version of urban living lacking necessary goods and services, appear as an alternative despite a poor QoL. This leads to the stigmatization of these settlements and of their inhabitants (Kamran,

2015). Quality of life, however, is a multidimensional concept and the instant identification of poor QoL with informal settlements merits empirical scrutiny.

In relation to informal settlements, a range of different management approaches have been considered ranging from their removal to their upgrading and empowerment. Due to their size and expansion, the removal approach is unfeasible. Therefore, informal settlements should be managed by assessing the QoL and the associated factors of satisfaction and dissatisfaction. Hence, the main focus of this research is the urban quality of life (UQoL) of inhabitants of informal settlements. Previous studies have approached satisfaction with UQoL and satisfaction in informal settlements using various indicators. However, there have been fewer attempts to measure and analyze the concepts of QoL, satisfaction and informal settlements in the urban planning literature (Westaway, 2006; Richards et al., 2007; Darkey & Visagie, 2013). Therefore, it is necessary to provide specific data and studies on resident perceptions of QoL and of the actions of city authorities and their services in this regard. Likewise, the causes of dissatisfaction with the QoL, due to the expansion trend of informal settlements in cities such as Kabul must be singled out. The objective of this study is to elucidate whether informal settlements can be identified with poor QoL for their residents through the perception of the latter of several variables intervening in the definition of quality of life. The article approaches this research question through a statistical analysis of survey results on different indicators of quality of life in informal settlements of Kabul.

2. Literature review

Developing countries are experiencing an accelerated rate of growth in sprawling informal settlements especially in capital cities and metropolitan areas. This phenomenon results from a series of factors including high birth rates in urban areas, conversion of rural land into urban land , massive social dislocations due to uneven patterns of growth (Agarwal, 2011), insufficient supply of affordable land and housing, economic crises (Uzun & Simsek, 2015), extensive migration to metropolitan areas, planning issues (Uzun et al., 2010), colonial transitions, urban poverty, and the impacts of neo-liberal programs on formal welfare for low income populations (Napier, 2007). Therefore, informal and squatter settlements do not necessarily represent examples of urban crises but rather have an important role in providing affordable housing and shelter (Khalifa, 2015). However, the expansion of urban informal settlements runs contrary to sustainable urban development due to the potential spread of poverty and environmental degradation. This expansion endangers the environment and imposes heavy constraints on environmental planning objectives. It also fosters inequality through housing insecurity and social deprivation (Soyinka & Siu, 2018). Therefore, to meet sustainability goals, these areas must achieve and maintain an internal balance between socio-economic, physical and environmental matters (Azami et al., 2017).

Various programs such as "cities without slums", strategies, policies, actions, and interventions have been implemented by the local, national and international authorities to address the rapid growth of

informal settlements. In 1950s and 1960s, the dominant approach to the management of informal settlements was their replacement by public housing or sometimes their demolition (Abbott, 2002). Different practices for upgrading informal settlements have been undertaken by the governments from service provision, in-site redevelopment (urban renewal), and physical upgrading to building public housing. However, all these approaches have proven unable to cope with sprawling of informal neighbors (Amiri & Lukumwena, 2018). The concept of sustainability was introduced in the 1990s for informal settlements with the aim of improving the self-construction of housing in these settlements and proposing other policies such as the possibility of saving and reusing water or recycling waste (Ward & Smith, 2015). The United Nations alternative to tackle this problem has been the Millennium Development Goals which aim to improve the lives of slum dwellers by 2020 (UN-Habitat, 2008). The Sustainable Development Goals (United Nations, 2015) include Goal 11 referring to the percentage of urban population living in informal settlements and emphasizes the safety, resilience and sustainability of these settlements (Wang et al., 2019). The key goal of all these policies and approaches is to increase the QoL and satisfaction of residents in these settlements by acknowledging first objective as well as subjective factors, views and attitudes among dwellers to picture better the components of well-being in communities.

Quality of life is a worldwide phenomenon concerning many people in developing and developed countries even at the 21st century. Studies on QoL appeared in the 1960s and were first used to measure development (Darkey & Visagie, 2013). Since then, definition, indicators and criteria for QoL have been subject to many discussions. According to Jeffres and Dobos (1995), QoL attempts to balance two global concepts, one narrow and the other broader. The first is more subjective and involves satisfaction with personal life including family, friends, spouse and oneself (Campbell, 1981). The second includes satisfaction with material issues such as housing, parks, neighborhood, transportation etc. (Evans, 1994; Govender et al., 2011). Hence, UQoL is a complex concept involving several disciplines that do not describe physical features but rather attempts to explain he relationships, dynamics, and the reticular pattern that exists between physical features. Therefore, the definition of UQoL is not linear and elementary but rather networked and complex (Serag El Din et al., 2013). The concept of UQoL arises when urban planners pay insufficient attention to social and economic values compared to the physical aspects of development (Rastegar et al., 2017). No doubt, the physical conditions of informal settlements greatly impact the QoL of communities (Wekesa, Steyn, & Otieno, 2011), and improving QoL through a better built environment allows for a more rapid transition towards sustainability (Degert et al., 2016; Yigitcanlar et al., 2015). This enables slum dwellers to maintain a balance with their environment and to shift from simple survival to aspirations for a higher QoL beyond the physical quality of the built environment (Degert et al., 2016). Hence, UQoL is an important indicator to reflect the level of urban economic development and social life (Ma et al., 2020), and the goal of urban sustainability is to achieve a balance between urban development and environmental protection that is equitable in terms of income, employment, housing, basic services, infrastructure, and transportation (Montoya et al., 2020). Abbott (2002) states that when addressing the sustainability of informal

settlements, it is necessary to consider the scale and concentration of first, settlements as a separate entity and second, of the families living in these settlements. In urban areas, research has emerged offering policy recommendations for informal settlements to achieve better levels of sustainability (see Azami et al., 2016; Devi et al., 2017; Degert et al., 2016; Dovey, 2015; El Menshawy et al., 2011; Parikh et al., 2012; Venter et al., 2019). Some scholars like Senlier et al (2009), and Din et al. (2013) believe that QoL is a crucial element in urban sustainable development. Many studies and institutions have developed both objective and subjective indicators of QoL from the perspective of sustainability. These indicators are often used to evaluate the habitability and sustainability of urban environments (Wey, 2019).

3. Urbanization in Afghanistan

Afghanistan is amongst the countries with a smaller proportion of urban population since merely one-fourth of its inhabitants live in urban areas (CSOIRA, 2014). But this trend is changing very fast. In 1950, only 5 percent of population lived in cities but in 2014 about 25 percent were already urban residents. Estimates point that this country will have one of the highest rates of urbanization in the world in the decade of 2020 (GoIRA, 2015). There are two main reasons for rapid urbanization in Afghanistan: the first is the return of Afghan immigrants from other countries to their homeland during the current period of relative peace and the second is widespread rural-urban migration. Since 2002, more than 6 million immigrants have returned to Afghanistan. Pakistan and Iran are the countries from where Afghan people are returning the most, with 3.8 and 1.6 million, respectively (UNHCR, 2014). While accurate information is lacking, it seems that most immigrants in the country have settled in cities (CSOIRA, 2014). In addition, over the past decade significant rural migration to cities has occurred because of unsafety in rural areas and better job opportunities in cities (Popal, 2014). Around 80 percent of the afghan population is less than 35 years old so this country has one of the youngest populations of the planet (CSOIRA, 2014). Managing this rapid change in manners that account for the protection of the environment, adequate employment opportunities and livelihoods, access to affordable land and shelter, and balanced urban-rural development is a major challenge as Afghan cities must face serious problems in all fields, especially in providing facilities and services, most notably housing. As an example, only 29 percent of urban residents have access to health services. None of Afghanistan's cities enjoys a comprehensive sewage system. Only 14 percent of residential houses have access to water through the water supply network and water quality is a serious issue due to contaminated wells. On average, only 2 percent of the city's space is dedicated to green areas, and more than 5.6 million citizens live in areas that are at moderate to high seismic risk (UNICEF, 2011). On average, 27 percent of urban inner spaces are empty land. The official and formal economy in Afghanistan is distinct and exceptional, even in the cities (AREU, 2006). It is estimated that 90 percent of economic activities are conducted in informal sectors (World Bank, 2004). The major part of the workforce employed by the informal economy is engaged in commercial activities, and in the civil and construction sectors, the latter as daily

workers. Drugs (opium production and trade) comprise a large part of the informal economy (UNODC, 2014). Afghanistan has around one million housing units in 175 cities, of which 32.8 percent are urban regular housing units, 54.5 percent irregular urban housing units, 7.5 percent housing units built in the hills and mountains, 3 percent apartment units, 1 percent mixed apartment units whose first floor is devoted to commercial use, and finally 1.2 percent units in refugee camps (GoIRA, 2016). Urban housing in Afghanistan is mostly informal and irregular as cities have expanded without any planning. This is opposed to the call by United Nations Agenda 2030 for enhancing sustainable urbanization and human settlement planning in all countries through reducing adverse per capita environmental impacts of cities (Baruti et al., 2020). The result is an irregular layout with sprawled populations, unequal social space with major infrastructure deficiencies, and large informal settlements. Access to suitable and affordable housing is a great concern for most urban Afghans. The government and the public sector are not able to create enough low-cost housing for people to meet demand. According to a survey conducted in 5 major cities, some 94 percent of poor inhabitants need new or improved housing (Harakat, 2014). Therefore, along with many social, economic, and political problems, urbanism and especially housing supply has become one of the main issues of concern in the country.

4. Kabul as a case study

The city of Kabul is the capital of Afghanistan and its political, administrative, educational and financial center. From around 10,000 people in 1700 (JICA: Sector Report 9, 2009, p. 2), Kabul holds currently about 4.29 million people (United Nations, 2019; CSOIRA, 2019). Estimates suggest that the city grew by about 10 percent every year in the first decade of the present century, increasing from 1.5 million in 2001 to over three million in 2010. Around 84 percent of the total population is urbanized (Wash Cluster, 2013). It is estimated that most refugees that have returned home since the beginning of the new government are living in Kabul's informal settlements (Costofwar, 2012). On the other hand, many migrants from villages have been drawn to Kabul due to its economic opportunities, as well as the lack of proper living conditions in rural villages. In the report of GoIRA Kabul (2015) it was pointed out that since 2002, about 6 million Afghans have returned to their homeland, almost half of them to cities. The spatial effects of this influx of people are informal developments of land and housing. At present, unplanned housing constitute approximately 70 percent (71.6 km^2) of Kabul's total living space, providing shelter for nearly 80 percent of the city's population (World Bank, 2016). There is a high difference in population size between Kabul as the largest city of the country and other Afghan cities such as Herat, Mazar-e-Sharif, Kandahar, and Jalalabad. Together, these five cities nearly equal 70 percent of the total urban population of Afghanistan. In terms of population density, Kabul has the highest density among Afghans' cities with 7,907 persons per square kilometer (CSOIRA, 2014). As the capital, Kabul hosts most international agencies currently working in Afghanistan, has two industrial parks and there is a plan to build and develop another park in the near future. Together with many

administrative and commercial activities, the capital offers better job opportunities than most other cities.

Master Plans for Kabul were charted in 1964, 1970 and 1978, but none of them has been developed. Three decades of conflict since 1979 have produced insurmountable obstacles to the implementation of planning, leading to destruction of an estimated 60 percent of the city's infrastructure (d'Hellencourt et al., 2003). Even though the development of the city outside the legal and planned areas is not officially endorsed, the informal built environment has provided countless facilities for the people, along with significant social and economic assistance to the government. Informal development has been a major contributor to poverty alleviation, and has sheltered homeless families, who before spent the nights in the streets of Kabul or lived in temporary refugee camps. The excellent quality of housing construction in Kabul is due to the high construction skills of the Afghan migrants who have settled in the city. In addition, some unplanned housing developments have improved the economic situation for the poor. After 2001, accessibility to land became increasingly problematic due to the population boom originating from returning of millions of refugees to their country. Problems in access to land are also related to widespread speculation, facilitated by state corruption (Pain, 2011). More than 40 percent of the city's area is still barren land and unused space. These areas have the capacity for high population numbers even up to 20 years ahead. There is a total of about 400,000 housing units in Kabul, of which only 25 percent are regular houses. Approximately 48 percent are irregular houses, about 6 percent are apartment blocks, -about 95 percent of the total number of apartments in Afghanistan- and 2 percent are housing for homeless in refugee camps (Table 1). Almost 82 percent of informal dwellings are on relatively flat terrain. But the remaining 18 percent, hosting 16 percent of the city's population, are located on hazardous hillsides. In these neighborhoods, the supply of services suffers from lower standards compared with flat spaces. Although it is difficult to provide services for the areas mentioned above, they are close to the center of Kabul and the major employment points. However, access to land and public transportation is limited.

Major investment in urban planning is conducted by the private sector in informal housing. At present, the value of unofficial Kabul's housing - without the value of land prices - is estimated at around 5 billion US dollars. For 78 percent of the families who are under the poverty line and spend a maximum of 100 US$ each month for home use (GoIRA, 2015), it is very difficult to become an owner in the official housing market. In the 22 districts of Kabul, informal settlements have proliferated after the absence of official and formal alternatives. Hence, the main pattern of construction and housing in Kabul is housing built by the people themselves, with flimsy and nondurable construction materials, in unsuitable locations such as unstable hillsides, flood prone areas and fertile farmland (Fig. 2).

Table 1. Housing types in the city of Kabul

Dwelling type	Area (ha)	Frequency (n)	Percentage (%)
Regular houses	4579.5	101,729	25.68
Irregular houses	9088.1	190,218	48.02
Hillsides houses	3138	64,622	16.31
Apartments	275.9	22,818	5.76

Apartments mixed used	79.7	8,031	2.02
Refugee camps	173.8	8,677	2.19
Total	**17335**	**396,095**	**100**

Source: GoIRA, 2016

5. Methodology

Study design, data and methods

After the review of the literature on quality of life, thirteen main indicators contributing to recognize the UQoL were selected: social; economic and employment; services; education; housing; facilities; environment; transportation; leisure; health; safety; sense & solidarity of place; and urban governance. These indicators along with variables and their explanation are presented in Table 2.

We prepared a household-based survey with questions extracted from the literature review which was administered to a sample of household heads in the informal settlements of the 22 districts of Kabul. 400 questionnaires based on Cochran sample size formula (2007) were distributed following the rules of stratified random sampling according to the population of each district. SPSS statistical software was used to run the analyses. According to the Cronbach's Alpha test the reliability of this questionnaire was confirmed with 0.940 α ($\alpha > 0.7$, acceptable).

Respondents were asked to show their satisfaction with the UQoL in Kabul We first identified the demographic and socio-economic characteristics of respondents, including social, economic, physical, and transportation. In order to analyze the different quality of life indicators, mean, Chi-Square and Asymp. Sig was used. Questionnaires asked respondents in informal settlements to rank their satisfaction with the quality of life indicators chosen. A 5-point Likert scale (1 to 5) was selected with the following equivalences: 1= "very dissatisfied", 2= "dissatisfied", 3= "neither satisfied nor dissatisfied", 4= "satisfied" and 5 = "very satisfied". Values above three indicate desired states while values below indicated a negative view of UQoL. In order to summarize the data and determine the most important variables in the overall satisfaction of citizens, factor analysis was used to determine and measure the factors affecting UQoL. Additionally, a regression model was developed to analyze and determine the type of variable relationship for the satisfaction of factors. Perceived quality of life was the dependent variable and the 13 indicators were the independent variables. Multiple linear regressions using the stepwise method were performed to find causal relationships between independent and dependent variables.

Table 2. Indicators and variables of urban quality of life

Indicator	Variable code	Explanation	References
Social	Q1	relations with neighbors	Schalock et al., 2005; Westaway, 2006; El-Osta, 2007; Sirgy et al., 2009a; Sirgy et al., 2009b; Türkoğlu et al., 2011; Sirgy et al., 2013; Węziak-Białowolska, 2016; Meg Holden et al., 2017; OECD, 2018; Mercer, 2018;
	Q2	satisfaction with attractive elements in the area	
	Q3	traditional and cultural ceremonies	
	Q4	friendship support	
	Q5	tendency to stay in the area	
	Q6	location dependency	
	Q7	vitality and livability of the neighborhood	

	Q8	tendency to participate in social activities	Arora & Kalra, 2018; Faria et al., 2018
	Q9	awareness of friends about the place of residence	
	Q10	population density and crowding	
Economic & employment	Q11	income	Türksever & Atalik, 2001; Schalock et al., 2005; Westaway, 2006; Oktay & Rustemli, 2011; Messer & Dillman, 2011; Sirgy et al., 2013; Zenker et al., 2013; Numbeo, 2018; OECD, 2018; Mercer, 2018; Faria et al., 2018
	Q12	living expenses	
	Q13	job safety	
	Q14	savings	
	Q15	satisfaction with working hours	
	Q16	satisfaction from colleagues	
	Q17	job status	
	Q18	gap between the rich and poor	
Services	Q19	access to daily and weekly shopping centers in the neighborhood	Türksever & Atalik, 2001; El-Osta, 2007; Türkoğlu et al., 2011; Zenker et al., 2013; Meg Holden et al., 2017; Węziak-Białowolska, 2016
	Q20	access to cultural and artistic services	
	Q21	facilities and urban furniture	
	Q22	street lighting	
	Q23	access to administrative places	
	Q24	satisfaction with banking services	
	Q25	access to postal services	
	Q26	quality and speed of the internet	
	Q27	quality of consumer goods	
Educational	Q28	quality of education and educational facilities	Schalock et al., 2005; Westaway, 2006; El-Osta, 2007; Sirgy et al., 2009a; Sirgy et al., 2009b; Sirgy et al., 2011; OECD, 2018; Mercer, 2018
	Q29	job training	
	Q30	access to schools and other educational centers	
	Q31	satisfaction from educational level	
	Q32	quality of building of schools	
Housing	Q33	quality of renovation and stability	Türksever & Atalik, 2001; Schalock et al., 2005; Westaway, 2006; Richards et al., 2007; Zebardast, 2009; Sirgy et al., 2011; Türkoğlu et al., 2011; Stimson & Marans, 2011; Sirgy et al., 2013; Bardhan, Kurisu & Hanaki, 2015; Meg Holden et al., 2017; OECD, 2018; Mercer, 2018; Lau et al., 2018
	Q34	number of residential units	
	Q35	government support to buy a home	
	Q36	number of rooms of home	
	Q37	equipment and furniture of home	
	Q38	home assets	
	Q39	price of home in the neighborhood	
	Q40	rent prices in the neighborhood	
	Q41	housing design in the neighborhood	
	Q42	size of the home	
	Q43	privacy	
	Q44	safety of the home	
Facilities	Q45	access to drinking water and water supply networks	Richards et al., 2007; Stimson & Marans, 2011; Numbeo, 2018
	Q46	access to electricity	
	Q47	access to gas	
	Q48	telecommunication network facilities	
	Q49	mobile antenna situation	
	Q50	sewage disposal systems	
	Q51	access to safety facilities like firefighting	
Environment	Q52	waste collection	Türksever & Atalik, 2001; Węziak-Białowolska, 2016; Meg Holden et al., 2017; Wekisa & Majale, 2020
	Q53	air quality	
	Q54	peace and quietness	
	Q55	water quality	
	Q56	street cleaning	
	Q57	green spaces	
	Q58	the existence of bad odours	
Transportation	Q59	cost of public transportation	Westaway, 2006; Sirgy et al., 2009a; Sirgy et al., 2009b; Türkoğlu et al., 2011; Mridha et al., 2011; Messer & Dillman, 2011; Mercer, 2018; Arora &
	Q60	quality of bus services	
	Q61	access to bus and minibus station	
	Q62	access to taxis	
	Q63	access to gas and petrol stations	
	Q64	access to parking	

	Q65	quality of streets	Kalra, 2018; Faria et al., 2018; Kaklauskas et al., 2018
	Q66	quality of sidewalks and pedestrian lanes	
	Q67	biking facilities	
	Q68	traffic situation	
	Q69	time spent traveling to work and study	
	Q70	safety against accidents	
Leisure & recreation	Q71	number of recreational places	Schalock et al., 2005; Westaway, 2006; Richards et al., 2007; Sirgy et al., 2011; Türkoğlu et al., 2011; Oktay & Rustemli, 2011; Marans, 2015; Mercer, 2018; Arora & Kalra, 2018; Faria et al., 2018
	Q72	sport facilities	
	Q73	open space facilities for leisure and recreation	
	Q74	access to recreational facilities	
	Q75	access to park and green spaces	
	Q76	access to cultural and religious spaces	
	Q77	traveling and excursion with family	
	Q78	time for reading books, newspapers, etc.	
Health	Q79	medical expenses	Westaway, 2006; El-Osta, 2007; Sirgy et al., 2009a; Sirgy et al., 2009b; Sirgy et al., 2011; Oktay & Rustemli, 2011; Messer & Dillman, 2011; Stimson & Marans, 2011; Sirgy et al., 2013; Meg Holden et al., 2017; Numbeo, 2018; OECD, 2018; Mercer, 2018; Arora & Kalra, 2018; Kaklauskas et al., 2018
	Q80	access to health centers	
	Q81	access to physicians	
	Q82	medical insurance	
	Q83	mental health	
	Q84	vegetable and fruit consumption in food programs	
	Q85	protein in food programs	
Safety	Q86	crime rate	El-Osta, 2007; Türkoğlu et al., 2011; Mridha et al., 2011; Messer & Dillman, 2011; Khalil, 2012; Sirgy et al., 2013; Węziak-Białowolska, 2016; Meg Holden et al., 2017; Numbeo, 2018; OECD, 2018; Kaklauskas et al., 2018
	Q87	safety of children and women	
	Q88	safety of residents in public spaces	
	Q89	safety of nighttime mobility	
	Q90	performance of police and safety centers	
Sense & solidarity of place	Q91	sense of belonging to the community	Khalil, 2012; Rezvani et al., 2013; Chamhuri et al., 2015; Marans, 2015; Arora & Kalra, 2018
	Q92	cultural and social consciousness	
	Q93	satisfaction with citizenship rights	
	Q94	relation with others	
	Q95	participation in social and religious activities	
	Q96	future life expectancy	
Urban Governance	Q97	number of NGOs	Kearns & Forrest, 2000; Sirgy et al., 2009a; Sirgy et al., 2009b; Chamhuri et al., 2015
	Q98	considering people s opinion in urban planning	
	Q99	performance of the municipality	
	Q100	role of different organizations	
	Q101	civil liberties	
	Q102	law enforcement	

6. Results

In the present study, QoL is defined as the result of providing for human needs and wants through existing resources, facilities, and opportunities on the one hand, and the perceived satisfaction of individuals from the provision of these needs and wants on the other. Human needs and wants include physical, biological, psychological, economic, and social indicators of relevance for humans. These needs and wants are provided by the resources, opportunities, and facilities available in each setting. Therefore, the QoL can be considered as the ability of the environment to supply the necessary resources to meet the daily needs and wants of human life. In this study, the environment refers to the urban environment where people live.

6.1. Demographic and socioeconomic characteristics

In this section, the demographic and socioeconomic characteristics of the respondents are presented (Table 3). According to the survey 80 percent of the respondents were men and 20 percent women. 19.8 percent were single, 79.8 percent were married and about 0.4 percent were divorced. The highest number of respondents belonged to the age group of 25-34 years, and the lowest was in the group over 55 years. In terms of education, 36 percent were illiterate, and 47.3 percent had primary education. Concerning social indicators, time of residence, family members and race were the main indicators. Results showed that approximately 70 percent of people had lived in these informal settlements in Kabul for less than 10 years, showing perhaps the relative stability of Afghanistan after the war. Most families had a size of 5 and more members. Pashtun population constituted 41.8 percent of the total sample the rest being from Tajik, Hazare and Ozbak origin. Economic information, including employment status, showed that almost 23 percent were salaried workers 22.3 percent self-employed, and 12 percent were engaged in public and private organizations, 1.3 percent were retired and drawn to these settlements because of insufficient pensions and the inability to purchase a home in the formal housing market. More than 20 percent of the respondents in the unemployed group were looking for work. Income data from the questionnaire showed that the highest frequency, i.e. 51.7 percent, was recorded in the group between 6,000 and 18,000 Afghanis per month (75.18$ to 225.54$). Ownership data showed that 54.8 percent were house owners. However, ownership, in this context does not imply an official document issued by government agencies. People paying mortgages and renting comprised 33 percent and 12.3 percent of the sample respectively. 45 percent had 3-room houses, and the majority (47.3 percent) had one floor. Due to the lack of documents stating the legal ownership of land, fewer people planned to build houses of more than 2 floors. In limited cases, buildings with more than 2 floors obeyed to the existence of new settlements and family affiliation of individuals. Transportation data indicates that people in settlements used taxi and private cars for their daily travels, followed by minibuses adapted to width limitations of streets in these settlements. Lack of buses, the low cost of taxi and personal cars, cultural and traditional features, such that the refusal of mixing men and women in public transportation vehicles by some Kabul citizens, as well as the inappropriate routes and safety of bicycle explain the predominance of cars and taxis.

Table 3. Demographic and socio-economic characteristics (n = 400)

			Frequency (n)	Percentage (%)	Cumulative Percent (%)
Social	**Gender**	Male	320	80.0	80.0
		Female	80	20.0	100.0
	Age (yrs)	15-24	107	26.8	26.8
		25-34	177	44.3	71.0
		35-44	90	22.5	93.5
		45-55	21	5.3	98.8

		>55	5	1.3	100.0
	Marital Status	Single	79	19.8	19.8
		Married	319	79.8	99.5
		Divorced	2	0.4	100.0
	Education	Illiterate	144	36.0	36.0
		Primary	189	47.3	83.3
		High school	56	14.0	97.3
		Bachelor	10	2.5	99.8
		Master Degree & Ph.D.	1	0.3	100.0
	Time Residence	<5	101	25.3	25.3
		5-10	178	44.5	69.8
		10-20	112	28.0	97.8
		20-30	9	2.3	100.0
		>30	0	0.0	
	Family Members	<3	8	2.0	2.0
		3-5	149	37.3	39.3
		>5	243	60.8	100.0
	Race	Pashtun	167	41.8	41.8
		Tajik	135	33.8	75.5
		Hazare	89	22.3	97.8
		Ozbak	5	1.3	99.0
		Others	4	1.0	100.0
Economical	**Employment**	Employee	48	12.0	12.0
		Worker	91	22.8	34.8
		Self-employment	89	22.3	57.0
		Housewife	56	14.0	71.0
		Retired	5	1.3	72.3
		Unemployed	53	13.3	85.5
		Student	29	7.2	92.8
		Looking for job	29	7.2	100.0
	Income (Af.)[1]	<1000	16	6.9	6.9
		1000-6000	38	16.4	23.3
		6000-18000	120	51.7	75.0
		18000-40000	58	25.0	100.0
		>40000	0	0.0	
	Housing Ownership	Landlord	219	54.8	54.8
		Paying Mortgage	132	33.0	87.8
		Tenant	49	12.3	100.0
Physical	**Number of Rooms**	1.00	21	5.3	5.3
		2.00	101	25.3	30.5
		3.00	180	45.0	75.5
		4.00	97	24.3	99.8
		5.00	1	0.3	100.0
	Building Floors	1.00	189	47.3	47.3
		2.00	158	39.5	86.8
		3.00	52	13.0	99.8
		4.00	1	0.3	100.0
Transport	**Transportation**	Bicycle	4	1.0	1.0
		Motorcycle	24	6.0	7.0
		Minibus	112	28.0	35.0
		Taxi	138	34.5	69.5
		Personal car	122	30.5	100.0

1. Each Afghani is equal to 0.01253 US$

6.2. Assessing the different indicators of quality of life

In this section, the level of satisfaction of the respondents was assessed using variables related to the thirteen indicators of QoL outlined before. Survey data was subject to several statistical analyses. First,

means from the values obtained in the Likert scale were calculated and chi square test performed in order to detect significance (see Tables 4 and A.1). This statistic is significant for all variables at the 95 percent level.

Regarding first the social indicators, the highest satisfaction relates to having friends in the place of residence of the respondents. This is due to the robust social fabric of people in Afghanistan which, in turn, is based on tribal structures. Self-satisfaction to live in a particular area of the city, friendship support and neighbor relations are all confirmed as relevant. By providing relative safety and significant economic growth, after the war, Kabul has become a focus for population attraction in recent years, but people are generally satisfied with population density and crowding in their neighborhoods. The smallest level of satisfaction is related to traditional and cultural ceremonies. Cultural differences and practices of holding ceremonies among relatives and tribes of Kabul, which sometimes creates unsafe situations, leads to dissatisfaction among citizens.

For economic and employment matters, eight variables were used. In this case a situation similar to social indicators regarding satisfaction was observed. The greatest dissatisfaction concerned the existence of a gap between the rich and the poor within the areas. In other cases, the mean value indicated satisfaction from working hours, which may relate to a certain work ethic. However, despite satisfaction in terms of working hours, citizens were not pleased with job safety, job status and savings. Long working hours, therefore, did not lead to increased assets and in particular, to savings by these individuals. This, in turn, affected access to affordable housing.

Nine variables composed the indicator of services, and the chi-square test was significant for all of them. However, the mean was not high. The highest satisfaction of citizens was related to the quality of consumer goods, the quality and speed of the internet, and the access to daily and weekly shopping centers in the neighborhood, all of them rated slightly above the mean.

In the educational indicators, significance was confirmed, but all variables scored below the mean. Thus, and despite the efforts of the Afghan government to provide education in the last two decades, the perception of Kabul citizens in this regard was not satisfactory enough. The lack of sufficient facilities for students from elementary to postgraduate levels, inadequate Afghan government funding for education, cultural conditions, and depriving girls of education were identified as issues of concern.

In the housing sector, twelve variables were considered. In this section, and beyond the significance of the questions raised, means showed low satisfaction among citizens. The lack of government support for housing which only provides facilities for its employees, the renovation and strength of residential units against natural disasters due to the poor state of some residential units, and high rents and prices for housing raised most preoccupation. Residential units have a simple design because of the use of cheap materials. This influences the type of housing construction and causes citizens' dissatisfaction.

Findings concerning facilities showed that the highest satisfaction was with mobile antennae due to the proliferation of this device, non-receipt of taxes from foreign companies, and the competitiveness of companies. However, telecommunication network facilities and access to electricity in these settlements

scored the lowest level of satisfaction. The perception of access to drinking water and water supply networks, gas, sewage systems and safety centers was below average.

The significance of the environmental indicator was also confirmed, but again with low levels of satisfaction. Bad odours annoying the citizens of informal settlements were perhaps the most significant example of this. Peace and quietness indicated a value close to average, which is an intermediate state in the satisfaction of individuals. Other variables such as air quality, water quality, waste collection, street cleaning, and the number of parks and green spaces obtained lower scores than the average.

As discussed above, transportation status was not considered desirable. More detailed questions were introduced to better assess this situation. The chi-square test for all options was significant and the mean was low. The lowest scores were attributed to facilities for bicycles, car parking, motorcycles, and pedestrians. Access to minibus stations and public transportation costs were perceived as deficient, which is why citizens of informal settlements prefer to use personal cars and taxis. But this option in turn brings dissatisfaction with urban traffic and the time spent traveling to work and study. In informal settlements, streets have a reduced width - 4 to 6 meters – and have become mere passageways for just one vehicle. But what streets do not allow is the traffic of vehicles passing at the same time. However, widening of streets, reducing personal use of personal vehicles and the removing of parking in street margins, would make possible to manage this problem.

As to the indicators of leisure and recreation, and recreational aspects, nine variables were introduced, showing in general a very low level of satisfaction. Cultural conditions, lack of leisure programs, lack of leisure facilities, and the high cost of some leisure spaces as well as the perceived risk of using some spaces such as swimming pools for women made citizens of these settlements unable to enjoy leisure activities. Leisure programs and traveling with family were the main worries. On the other hand, people spent less time studying and reading books, newspapers, etc., due to widespread illiteracy.

In terms of health, variables were significant and means did not indicate a favorable position in people's levels of satisfaction. The lowest level of satisfaction affected health and treatment services, such as health insurance, for which the Afghan government does not take the necessary measures. In the next step, access to health centers, physicians, medical expenses, mental health and meat consumption did not raise satisfaction. Reasons for this could be the lack of specialized doctors, high costs of treatment, and lack of medical facilities, above all in the public sector. Due to favorable agricultural conditions around Kabul, the highest satisfaction was found in vegetable and fruit consumption in food programs the reasons for which may lie in the lifestyle of people accustomed to the consumption of vegetables and fruits, the existence of large agricultural land on the margin of Kabul, and cheap prices.

The indicator of safety did not show satisfactory values for any item included. The mean of all variables was low. Despite the relative stability after the war, people were not yet satisfied with the current conditions. The safety of children and women, the safety of residents in public spaces, the performance of police and safety centers, the safety of night traffic and the crime rate, respectively, showed the lowest satisfaction means in this indicator.

Another indicator was the sense of place and social solidarity. The chi-square test indicated that this was a significant variable. The highest level of satisfaction was related to the place of residence. Apparently, social conditions, the presence of relatives and tribal links were behind this perception. The lowest level of satisfaction with citizenship rights was due to non-compliance with the requirements of the Charter of Citizens' Rights and the hope of a better life in the future due to safety issues as well as distrust of government and government corruption. The Afghan government has set goals regarding independence, territorial integrity, public order and national safety in the national constitution. However, an overemphasis on safety requirements, public order, public morality, economic foundation, and the circumstances and the state of the community in determining the duties of its citizens has produced general dissatisfaction.

Likewise, findings from the urban governance indicator showed that all variables were lower than the mean, and only ethnic liberty was partially satisfactory. People were not actively involved in decisions of city councils, probably because of the strong dependence of this institution of urban management on the government, together with the issues previously raised regarding systemic corruption. Citizens also showed low satisfaction with the conditions of law enforcement. The role of non-governmental organizations (NGO) as intermediary rings between government and people that can play a constructive role in empowering informal settlements was not fulfilled as these organizations were perceived of acting passively. Some of these organizations' dependence on foreign countries and domestic parties were other causes of low satisfaction.

All indicators were analyzed, and the results are shown in Table 4. It can be seen how means do not reach satisfactory values for many indicators. The indicators of leisure and recreation, and urban governance showed the lowest levels of satisfaction. According to the analyses described above for each indicator separately, overall satisfaction with quality of life in Kabul informal settlements was low.

Table 4. Response pattern of each indicator (n = 400)

Indicator	Mean	Std. Deviation	Chi-Square	df	Asymp. Sig.
Social	2.8772	.43050	352.250	24	.000
Economic & employment	2.5003	.52681	321.740	22	.000
Services	2.8765	.72339	90.980	27	.000
Educational	2.5400	.85863	108.230	17	.000
Housing	2.3788	.36791	223.760	23	.000
Facilities	2.2018	.60765	112.430	18	.000
Environment	2.5368	.43511	263.425	16	.000
Transportation	2.1508	.49502	118.265	26	.000
Leisure & recreation	1.8894	.47488	341.070	21	.000
Health	2.4443	.47672	249.890	17	.000
Safety	2.1325	.58361	239.280	15	.000
Sense & solidarity of place	2.3996	.39098	275.920	13	.000
Urban Governance	1.9213	.37959	197.720	11	.000

Correlation is significant at $p < 0.05$

6.3. Statistical Analysis

Factor analysis

In order to make the data amenable to synthesis, factor analysis was used. First, the Kaiser-Meyer-Olkin (KMO) test, one of the methods available to determine the suitability of the data for factor analysis, was performed. Also, for variables to be significant, they need to be correlated, in order to ensure that the correlation matrix was not equal to zero, Bartlett's test was used. A high KMO indicates the existence of a statistically acceptable factor solution describing relations between the variables (Shieh, Wu & Huang, 2010). Thirteen indicators with 102 variables were analyzed from the questionnaires. Since the KMO index was 0.837 (close to 1) and Bartlett's test of sphericity was high at 15959.116106, the sample number was considered sufficient for factor analysis. In addition, the value of significant, associated with a *p.value* of 0.000 was less than 0.05. Therefore, both tests indicated the suitability of the variables for factor analysis (Table 5).

Table 5. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.837
Bartlett's Test of Sphericity	Approx. Chi-Square	15959.116106
	df	1770
	Sig.	.000

To select the number of factors, based on the Kaiser test, both the eigenvalues approach and the percentage of variance approach were used. The special values were relatively high, and the relatively small eigenvalues were ignored. Only factors having a specific value higher than 1 were selected and retained. For the percentage of variance, all extraction factors must explain at least 60 percent of the total variance (Ghosh & Jintanapakanont, 2004). The factors left out of the analysis were those that did not contribute to explain more variance. In this research, the number of extracted factors based on the eigenvalue and screen plot was 16. The first factor explained 23.05 percent of the variance while all factors explained 74.29 percent of total variance.

To maximize the relationship between items and factors, axes must be rotated. The main goal in rotating factors is to transform the factor structure into a simple structure of factor loading that can be interpreted more easily. As Tabachnick & Fidell (2013) and Solstrand & Gressnes (2014) state, it is unlikely that in social sciences, isolated factors have correlation with each other. However, for most statistical analyses, Varimax rotation is used and this rotation is applied to this dataset. Rotation reinforces the strong loadings and minimizes the weak ones (Solstrand & Gressnes, 2014). Here the goal is to diagnose the number of variables, to form a set of uncorrelated variables and to estimate the maximum variance of the dependent variable. Therefore, principal component (PC) was selected using orthogonal rotation due to the absorption of the maximum amount of shared and specific variance. The results of the orthogonal rotation method are shown in Table 6. Each variable is in a factor with which a significant correlation factor exists. Some of these factors indicate a positive effect, while others indicate a negative effect. In this research, the negative effects on the component 5 for both variables 39 and 40, namely, is observed for high rents and prices for housing. In addition, some variables were not included in any factor.

Table 6. Factor loading matrix with Varimax-rotation for UQoL in informal settlements

Component	Item										percent of Explained Variance
1	**S22**	**S52**	**S41**	**S45**	**S20**	**S56**	**S21**	**S51**	**S29**	**S63**	
	.859	.840	.817	.787	.785	.774	.755	.730	.727	.717	
	S69	**S28**	**S62**	**S30**	**S88**	**S44**	**S60**	**S47**	**S100**	**S38**	
	.674	.663	.614	.603	.598	.589	.586	.585	.581	.578	
	S46	**S78**	**S59**								
	.570	.548	.459								23.053
2	**S98**	**S82**	**S67**	**S35**	**S3**						
	.810	.808	.765	.751	.637						30.546
3	**S75**	**S71**	**S57**	**S68**							
	.847	.840	.783	.576							37.734
4	**S11**	**S12**	**S14**								
	.854	.820	.776								42.301
5	**S39**	**S40**									
	-.843	-.800									46.431
6	**S85**	**S86**	**S83**	**S53**							
	.823	.737	.675	.416							50.094
7	**S95**	**S97**									
	.725	.685									53.306
8	**S1**	**S43**									
	.783	.678									56.228
9	**S23**	**S66**									
	.785	.529									58.987
10	**S76**										
	.815										61.509
11	**S15**	**S8**	**S25**								
	.804	.664	.427								63.744
12	**S91**	**S94**									
	.753	.620									65.921
13	**S93**	**S96**									
	.691	.690									67.924
14	**S2**	**S7**									
	.846	.504									69.800
15	**S90**										
	.798										71.585
16	**S73**										
	.780										73.294

Multiple regression

Multiple regression was used to determine the relationship between variables and to develop a causal model using the stepwise method. The perceived quality of life is considered as a dependent variable and the 13 indicators are the independent variables. Table 6 shows the model's best fit statistics. In total, we obtained seven models. Transportation in the first model estimates 0.544 units of variable of UQoL, which means a prediction of 54.4 percent of the changes in this variable. In the second model, with the addition of training, these two variables, transportation and education, predicted a total of 0.594 units of variables of quality of life in Kabul, meaning that 59.4 percent of changes in the dependent variable were predicted by two independent variables. The trend in the third model, with the addition of housing to 61.9 percent, in the fourth with the addition of safety to 62.5 percent, the fifth with the addition of leisure to 63.1 percent, the sixth with the addition of facilities to 63.5 percent and the seventh with the

addition of a sense and solidarity of place 63.9 percent of the dependent variable predicted the quality of life.

The standardized coefficients or *Beta* helped us determine the relative contribution of each independent variable to the explanation of changes in the dependent variable. In this research, the *Beta* value of transportation, education, housing, safety, leisure and recreation, facilities, sense and solidarity of place played the most important role in predicting the dependent variable. This was true for all regression models, except for the seventh model in which facilities came after transportation, education, followed by housing, safety, leisure and recreation, and sense and solidarity of place.

Finally, ANOVA examines the hypothesis of a linear relationship between variables. Given that the Sig. value is less than 0.01, with a confidence of 99 percent, a linear correlation between the dependent variable and the independent variables can be established. As Table A.2 shows, the Sig. value of the T-test, the coefficients of the independent variables indicated are less than 0.01, the null hypothesis is rejected, and the alternative hypothesis is accepted. Therefore, with the significance of the coefficients, the final relation is as follows:

$UQoL = \beta\ Transportation + \beta\ Education + \beta\ Housing + \beta\ Safety + \beta\ Leisure\&\ recreation + \beta\ Facilities + \beta\ Senseplace + \varepsilon$

$UQoL = .505 + .155 + .341 + .192 + .213 + .215 + .175 - 1.820$

The VIF values for all variables are less than 10. Therefore, there is no collinearity statistics between the independent variables used (Table A.2).

Table 6. Regression model of UQoL

Model Summary					ANOVA		
Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate	Mean Square	F	Sig.
1	.738[a]	.544	.543	.59951	170.703	474.950	.000
2	.772[b]	.596	.594	.56517	93.471	292.628	.000
3	.788[c]	.622	.619	.54758	65.004	216.792	.000
4	.793[d]	.628	.625	.54331	49.288	166.976	.000
5	.797[e]	.635	.631	.53893	39.863	137.245	.000
6	.800[f]	.640	.635	.53593	33.478	116.558	.000
7	.803[g]	.645	.639	.53306	28.909	101.735	.000

a. Predictors: transportation, b. Predictors: transportation, educational, c. Predictors: transportation, educational, housing, d. Predictors: transportation, educational, housing, safety, e. Predictors: Transportation, Educational, Housing, Safety, Leisure & recreation, f. Predictors: Transportation, Educational, Housing, Safety, Leisure & recreation, Facilities, g. Predictors: transportation, educational, housing, safety, leisure & recreation, facilities, sense & solidarity of place

Dependent Variable: perceived UQoL

Regression results showed that the indicators of transportation, education, housing, safety, leisure, facilities, and sense of place scored the highest relevance regarding quality of life for Kabul citizens. Factor analysis summarized variables in 16 factors: access to facilities and services, socio-institutional support, urban tranquility, household economics, housing costs, urban happiness, public and non-public

participation, neighborhood relations, walking, cultural facilities, urban identity, urban well-being, urban vitality, security and recreational facilities. It can be noted how most factors are economic and social. Many informal settlements are built in parts of Kabul able to provide residents with close access to education and health services. For example, some residents have built their homes on the hillside of Asmaei Mountain for greater proximity to these services. Also, in order to access the workplace, many residents who work in the downtown area, such as shopkeepers, mechanics, etc., have attempted to build their homes close to work, in hillsides located near city center even though there are many problems related to the state of the streets and transportation. In many homes built on the hillsides around the city most of the residents are agricultural workers.

7. Discussion

Informal settlements in Kabul involve a wide range of complex urban, social and environmental issues. The situation of Kabul as a capital city has attracted a number of low income rural-urban migrants and these settlements have sprawled. However, the Afghan government does not recognize informal settlements as part of the urban fabric.

In this study in general, the perceived QoL of the respondents was not very high. Our findings on the subjective indicators of QoL in informal settlements appear to imply that these indicators present an intermediate status regarding satisfaction. Part of the overall situation of dissatisfaction with the UQoL of Kabul residents in the indicators under consideration could be also shaped by the characteristics of the city itself.

Indicators of social relationships score the highest mean levels of satisfaction. The highest satisfaction relates to having friends in the place of residence of the respondents and the lowest is related to traditional and cultural ceremonies. This proves the relevance of subjective, non- material and non-tangible factors in the perceived quality of life.

For economic and employment matters the general level of satisfaction was close to average. However, the satisfaction level of citizens from job safety, job status and savings remained low.

Similarly, the average level of satisfaction for the indicator of services was not high either. People were only satisfied with internet access and access to daily and weekly shopping centers in the neighborhood.

In the educational indicators, all variables scored below the mean. The lack of funding for education, cultural conditions, and depriving girls of education were identified as main concern in this aspect. This proves the high importance given to education possibly as a vehicle to improve socioeconomic status.

In the housing sector, means showed low satisfaction among citizens in some variables like the renovation and strength of residential units against natural disasters, housing rents and prices, design of residential units and construction materials.

Findings concerning facilities showed that some variables were below average such as access to electricity, drinking water and water supply networks, gas, sewage systems and safety centers. This is a chronic problem in the informal areas of cities all over the developing world and one which should

receive priority attention. Likewise, concerning environmental indicators, variables such as air quality, water quality, waste collection, street cleaning, and the number of parks and green spaces obtained lower scores than the average.

Public transportation was not perceived as very satisfying. This was not because of costs but mainly because of the physical layout of city and the limitation of street width in Kabul generally and in informal settlement specially, as well as to inadequate public transportation infrastructures like buses.

Most dissatisfaction was recorded for the indicators of leisure and recreation. In terms of leisure activities, the major issues were security facilities and costs. The traditional cultural structure of the country does not allow developing public recreational and leisure spaces in order to bring together men and women. Richards et al. (2007) argue that the dissatisfaction of leisure activities may be due to low levels of income to spend on travel or other leisure amenities. Leisure activities in Kabul are mainly home- centered and include watching television, resting, housekeeping, cooking, and gardening. There are limited outdoor leisure activities other than football and religious events.

In terms of health, variables were significant and means did not indicate a favorable position in people's satisfaction. The lowest level of satisfaction related to health insurance, access to health centers, physicians, medical expenses, mental health and meat consumption.

The indicator of safety did not show satisfactory values for any item included. The mean of all variables was low. The safety of children and women, the safety of residents in public spaces, the performance of police and safety centers, the safety of night traffic and the crime rate, respectively, showed the lowest satisfaction averages in this indicator.

The highest level of satisfaction in the indicator of sense of place and social solidarity was related to the place of residence and the lowest level of satisfaction was with citizenship rights and the hope of a better life in the future.

Variables of urban governance related to the performance of various departments and municipalities, scored also low values due to lack of trust of people in the municipal administration related to administrative corruption. Kabul's systemic corruption and nepotism in the distribution and use of resources has made urban governance ineffective. According to Darkey & Visagie (2013) this represents a major obstacle for the improvement of socio-economic conditions. Urban planners and community leaders must act justly and fairly regarding the urban poor. On the other hand, according to Gilbert (2015), this section is a response to the failure of governments to achieve rapid and widespread urbanization and characterizes failing institutions of urban management. Akrofi (2001) states that local and national governments have a central role to play for upgrading informal settlements through legislation and resource provision (see also Wekesa et al., 2011). The ultimately most useful approach, however, is one that also includes changes in urban governance so that community capital can be maintained and improved over the longer term (Minnery et al., 2013).

8. Conclusion

In Kabul, informal settlements are mixed with formal settlements. Therefore, some municipal services and facilities for formal residences can also be used by informal settlements. In this city, the private sector often provides many facilities such as fuel, water supply, potable water, sewage disposal and waste collection. This sector provided services in exchange for payments, so citizens can access the facilities whether they are in formal or informal settlements. Therefore, in this sense there is not a large difference between formal and informal settlement in accessibility to certain, basic urban facilities and services.

Our study of a set of UQoL indicators, which are important components of a city's daily and future life, may facilitate a reasonable evaluation of the current state of the city in order to take action to address planning problems. Life satisfaction may include housing, neighborhood and community satisfaction (Marans, 2011) as well as security (Weziak-Białowolska, 2016), and these may affect overall life satisfaction. People rate satisfaction with their neighborhood differently. The variable safety of the neighborhood is positively correlated with quality of life, while personal insecurity is negatively correlated. Several studies have argued that these factors are complementary to each other. Social contacts provide a safe neighborhood for people to interact with each other, so a space of trust increases, thereby leading to higher levels of social capital (Chica-Olmo et al., 2020). As long as people are happy in their daily lives, their quality of life may increase, meaning that the more intangible aspects of the concept should be emphasized more despite possible subjectivity biases.

The major limitation of this study is that Afghanistan does not have databases, especially on socio-economic and physical-environmental topics. Therefore, we were unable to work with official data to assess UQoL, using subjective data based on household questionnaires instead. The extended variables collected in this study could be used to correlate the quality of life for other informal settlements in different countries that face objective data constraints. For future studies, demographic indicators and quality of life variables could be considered through correlation and regression models. Also, the present study focuses only on the existing situation of households. Thus, future studies should include the previous and present status of immigrants. Lastly, since we targeted to assess the quality of life in informal settlements, it is unclear whether the level of life satisfaction in these settlements was lower than that of the formal sector, which would require further examination.

Beyond the results and limitations reported above, this study in our opinion provides three new insights. First, it offers an overview of the status of informal settlements in Kabul. In addition to the findings mentioned, perhaps the most striking feature of these settlements is the size of the land parcels in houses that range from 200 to 350 square meters and are much larger than the planned houses. However, in most parts of the world, the size of informal settlements is lower than that of official cities. Many citizens have lived for years in a home inherited from their ancestors. This can be an explanation for the large area of the homes in these settlements. Many others have lived in one neighborhood for many years and have simply relocated to the same neighborhood, reinforcing strong senses of place. This may

account for the relatively high level of satisfaction with homes and neighborhoods and the unwillingness to move to better neighborhoods. Second, data collected from the survey may help urban managers, planners and policy makers gain a better understand of socio-economic, physical and other needs of people living in informal settlements in Kabul. Therefore, this study of the UQoL of residents can be helpful when confronting challenges such as rapidly growing and changing needs of citizens. Improving the subjective aspects in addition to helping to reproduce concepts such as participation, trust and awareness may lead to the achievement of more objective targets. Finally, such a study can also be helpful for the upgrading and empowerment of urban poor communities, an increasingly important issue in the quest for sustainability in cities. Informal settlements are sustainable when they can cope with pressure and shocks. This is achieved by preserving or raising their capabilities and assets now and in the future (Nassar & Elsayed, 2018). Therefore, upgrading and empowering citizens in these settlements in order to reduce urban poverty must become a priority for urban policy. In addition, empowerment can enhance the capacity to increase job opportunities. Fundamental in this endeavor is the emphasis on income growth and poverty reduction in households. Since 2014, urban poverty has worsened in Kabul, partly due to a drop in the presence of international forces in Afghanistan, and the general decline of the Afghan economy. Urban poor families, internal homeless people, returnees, and women-headed households have been deeply affected by these large-scale economic changes. For this purpose, the empowerment approach has been accepted as the best way to intervene and to improve the quality of life on informal settlements (Gloeckner et al., 2004; Muchadenyika, 2015). Wekesa et al. (2011) discuss how technologies seek to empower communities. They also argue that safeguard the interest of the poor and strengthen the communities also requires empowering governments under strong legal frameworks. Upgrading informal settlement is one of the few approaches that may succeed. In this case, citizen cooperatives, community groups and local authorities provide the best prospects for the urban poor. Generally, if public policy purpose is to create an environment for promoting citizen's satisfaction and to improve their quality of life, urban managers should accept this type of settlement as a part of the cities and strive for its sustainability. Therefore, they need to revise their past attitudes in order to develop public policies that truly improve the status of the situation of the most disadvantaged households.

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Appendix A.

Table A.1. Response pattern of each variable (n = 400)

Indicator	Variable	Mean	Std. Deviation	Chi-Square	df	Asymp. Sig.
Social	Q1	3.0225	0.84188	333.975	4	.000
	Q2	2.8325	0.92552	201.675	4	.000
	Q3	1.1675	0.39349	474.695	2	.000
	Q4	3.1825	0.94149	201.275	4	.000
	Q5	3.6925	0.85719	245.25	4	.000
	Q6	2.6025	0.89246	215.975	4	.000
	Q7	2.8475	0.86087	262.575	4	.000
	Q8	2.665	1.1318	80.925	4	.000
	Q9	3.995	0.84366	114.9	3	.000
	Q10	3.3775	1.39458	112.075	4	.000
Economic & employment	Q11	2.4875	1.01361	151.375	4	.000
	Q12	2.2425	0.95969	176.625	4	.000
	Q13	1.77	0.72693	211.88	3	.000
	Q14	1.7775	0.92202	178.42	3	.000
	Q15	3.3925	0.80627	301.825	4	.000
	Q16	2.825	0.8433	267.55	4	.000
	Q17	1.7725	0.77281	187.78	3	.000
	Q18	3.735	0.87561	91.76	3	.000
Services	Q19	3.2525	0.9701	185.175	4	.000
	Q20	2.7625	1.34931	15.175	4	0.004
	Q21	2.18	1.00754	152.125	4	.000
	Q22	2.2825	1.06326	123.725	4	.000
	Q23	2.7625	1.08814	108.875	4	.000
	Q24	1.97	1.23406	273.1	4	.000
	Q25	2.78	0.92398	200.15	4	.000
	Q26	3.5525	0.79298	305.125	4	.000
	Q27	3.5625	0.77627	169.46	3	.000
Educational	Q28	2.935	1.22864	42.850	4	.000
	Q29	2.575	1.04982	118.950	4	.000
	Q30	2.52	1.21791	58.275	4	.000
	Q31	2.045	1.03472	199.100	4	.000
	Q32	2.625	0.97301	188.800	4	.000
Housing	Q33	1.86	0.80748	145.64	3	.000
	Q34	2.7175	0.83332	148.46	3	.000

	Q35	1.185	0.41377	449.54	2	.000
	Q36	2.875	0.92277	208.925	4	.000
	Q37	2.5125	0.92302	207.5	4	.000
	Q38	2.5975	1.11517	117.925	4	.000
	Q39	2.05	0.84515	115.74	3	.000
	Q40	1.9825	0.83302	120.06	3	.000
	Q41	2.3775	1.0259	141.3	4	.000
	Q42	2.7725	0.91259	243.175	4	.000
	Q43	2.96	0.73808	432.175	4	.000
	Q44	2.655	0.9451	201.925	4	.000
Facilities	Q45	2.1225	1.19837	162.925	4	.000
	Q46	1.8275	0.82732	155.42	3	.000
	Q47	2.3525	0.89456	94.7	3	.000
	Q48	1.1775	0.42597	471.455	2	.000
	Q49	3.3925	0.84275	296.375	4	.000
	Q50	2.4475	1.02463	170.525	4	.000
	Q51	2.0925	0.99065	72.34	3	.000
Environment	Q52	2.355	1.26014	103.525	4	.000
	Q53	3.005	0.8671	295.075	4	.000
	Q54	2.8	0.782	344.625	4	.000
	Q55	2.4725	1.17161	80.175	4	.000
	Q56	2.09	1.05579	166.475	4	.000
	Q57	1.885	0.83877	132.600	3	.000
	Q58	3.15	1.01739	176.075	4	.000
Transportation	Q59	2.05	0.81803	132.36	3	.000
	Q60	2.1225	0.77718	147.74	3	.000
	Q61	1.945	0.78964	140.04	3	.000
	Q62	2.9375	0.90312	233.075	4	.000
	Q63	2.7625	1.14428	87.625	4	.000
	Q64	1.735	0.6602	89.18	2	.000
	Q65	2.23	1.0023	148.675	4	.000
	Q66	1.8775	0.89414	126.34	3	.000
	Q67	1.2075	0.45822	429.365	2	.000
	Q68	2.19	0.83705	113.9	3	.000
	Q69	2.185	0.89598	97.68	3	.000
	Q70	2.5675	1.07393	118.825	4	.000
Leisure & recreation	Q71	1.9775	0.85371	112.94	3	.000
	Q72	2.0625	0.77466	157.14	3	.000
	Q73	1.275	0.52446	594.5	3	.000
	Q74	1.9	0.83471	130.86	3	.000
	Q75	1.7875	0.82404	164.94	3	.000
	Q76	1.9375	1.06839	237.575	4	.000
	Q77	2.2425	0.77795	156.66	3	.000
	Q78	1.9325	0.8183	130.1	3	.000
Health	Q79	2.265	0.8465	112.72	3	.000
	Q80	2.22	1.17901	132.75	4	.000
	Q81	2.235	1.12825	122.85	4	.000
	Q82	1.13	0.33672	219.04	1	.000
	Q83	2.815	0.67224	314.28	3	.000
	Q84	3.6075	0.76151	181.3	3	.000
	Q85	2.8375	0.72967	463.45	4	.000
Safety	Q86	2.9075	0.70724	299.54	3	.000
	Q87	1.6725	0.75277	221.3	3	.000
	Q88	1.945	0.93497	229.4	4	.000
	Q89	2.045	0.84544	109.88	3	.000
	Q90	2.0925	0.80034	133.7	3	.000
	Q91	3.25	0.75427	383.95	4	.000

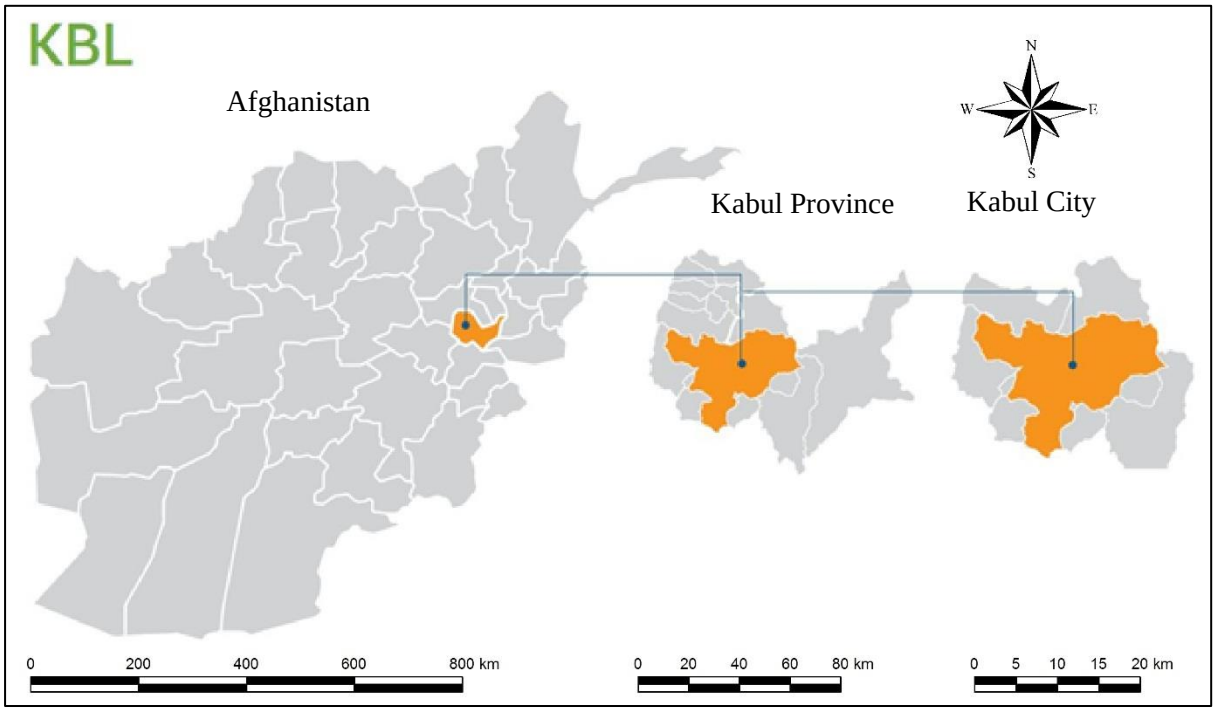
Sense & solidarity of place	Q92	2.8875	0.76897	376.175	4	.000
	Q93	1.45	0.61109	181.625	2	.000
	Q94	2.915	0.74105	397.525	4	.000
	Q95	2.3775	1.02842	142.025	4	.000
	Q96	1.5175	0.61696	144.965	2	.000
Urban Governance	Q97	1.6925	0.78708	209.06	3	.000
	Q98	1.15	0.35752	196	1	.000
	Q99	2.2025	1.06033	138.575	4	.000
	Q100	1.935	0.80461	138.34	3	.000
	Q101	3.02	0.749	442.6	4	.000
	Q102	1.5275	0.6711	313.1	3	.000

Correlation is significant at $p < 0.05$

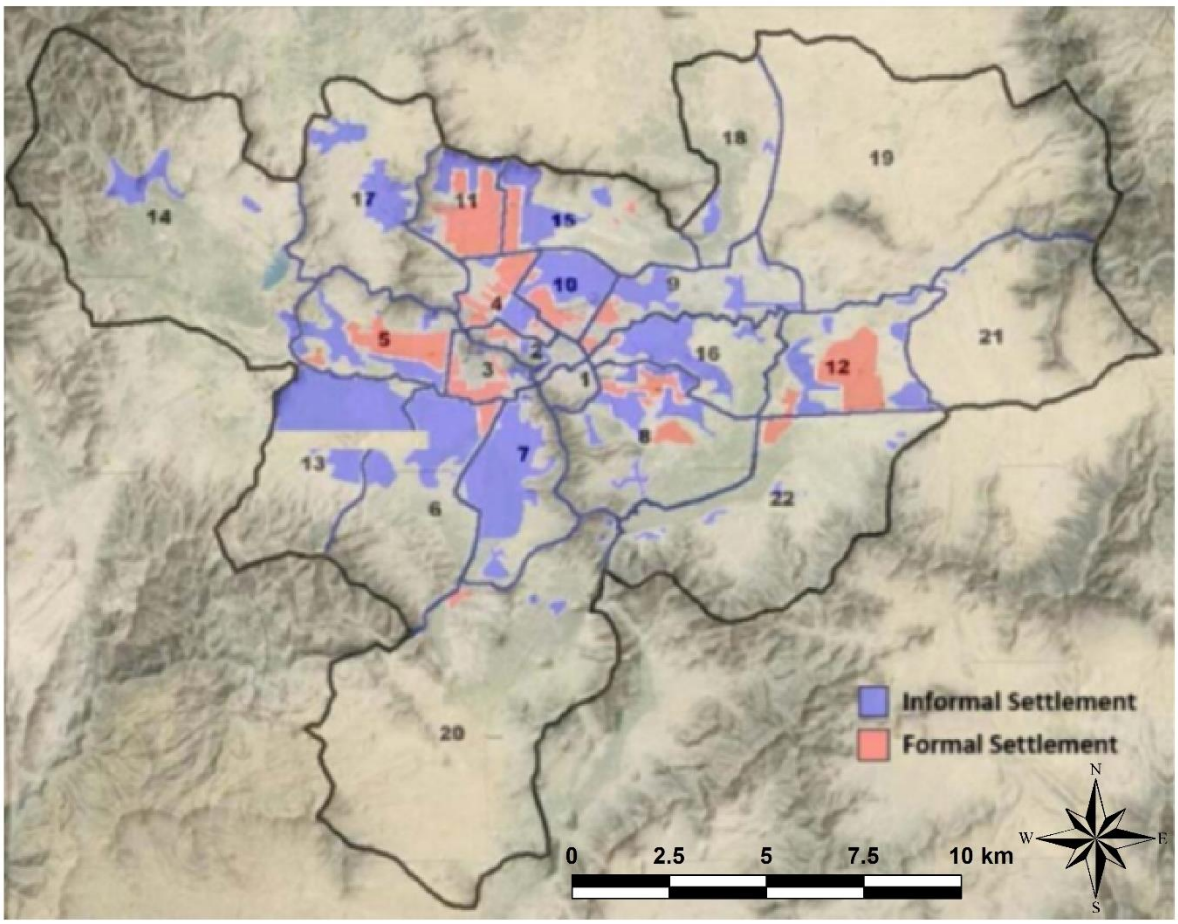
Table A.2. Multiple regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.667	.134		-4.984	.000		
	Transportation	1.321	.061	.738	21.793	.000	1.000	1.000
2	(Constant)	-.721	.126		-5.704	.000		
	Transportation	.988	.074	.551	13.375	.000	.599	1.670
	Education	.304	.043	.294	7.130	.000	.599	1.670
3	(Constant)	-1.403	.180		-7.809	.000		
	Transportation	.749	.085	.418	8.813	.000	.424	2.358
	Education	.304	.041	.294	7.364	.000	.599	1.670
	Housing	.502	.097	.208	5.188	.000	.593	1.687
4	(Constant)	-1.428	.178		-7.997	.000		
	Transportation	.685	.088	.382	7.805	.000	.392	2.549
	Education	.280	.042	.271	6.677	.000	.572	1.749
	Housing	.450	.098	.187	4.591	.000	.570	1.756
	Safety	.164	.061	.108	2.694	.007	.587	1.702
5	(Constant)	-1.549	.183		-8.485	.000		
	Transportation	.672	.087	.375	7.711	.000	.391	2.557
	Education	.243	.044	.235	5.568	.000	.518	1.932
	Housing	.404	.099	.168	4.094	.000	.553	1.809
	Safety	.168	.060	.111	2.788	.006	.587	1.704
	Leisure	.181	.066	.097	2.727	.007	.731	1.368
6	(Constant)	-1.523	.182		-8.369	.000		
	Transportation	.546	.102	.305	5.343	.000	.281	3.554
	Education	.179	.051	.173	3.484	.001	.369	2.707
	Housing	.346	.101	.144	3.418	.001	.519	1.925
	Safety	.179	.060	.118	2.972	.003	.584	1.714
	Leisure	.218	.068	.117	3.206	.001	.692	1.445
	Facilities	.206	.088	.141	2.329	.020	.250	4.007
7	(Constant)	-1.820	.223		-8.175	.000		
	Transportation	.505	.103	.282	4.888	.000	.273	3.666
	Education	.155	.052	.150	2.962	.003	.354	2.824
	Housing	.341	.101	.142	3.389	.001	.519	1.926
	Safety	.192	.060	.126	3.187	.002	.579	1.728
	Leisure	.213	.068	.114	3.153	.002	.691	1.446
	Facilities	.215	.088	.147	2.440	.015	.249	4.015
	Sense of place	.175	.077	.077	2.290	.023	.794	1.260

a. Dependent Variable: perceived UQoL


KBL
Afghanistan
Kabul Province
Kabul City
N
W
E
S
0 200 400 600 800 km
0 20 40 60 80 km
0 5 10 15 20 km

a.


14
17
11
15
18
19
10
9
4
5
2
3
1
16
12
21
13
7
8
6
22
20
Informal Settlement
Formal Settlement
0 2.5 5 7.5 10 km
N
W
E
S

b.

Fig. 1. a. Kabul position in Afghanistan (GoIRA, 2016), b. Formal and informal settlement by district (Habib, Hedayat, & Amiri, 2016 adapted Amiri & Lukumwena, 2018)

Fig. 2. Photograph of Kabul informal settlements, Afghanistan (photos taken by Fatema Hussaini, 2019)