

Formulating Regeneration Strategies for the Historical Fabric of Sanandaj City by Applying an Urban Acupuncture Approach*

Rojin Raoufi^a- Abbas Shieh^{b**}

^a M.A. of Urban Planner, Faculty of Art and Architecture, Islamic Azad University, Science and Research Branch, Tehran, Iran.

^b Assistant Professor of Urbanism, Faculty of Art and Architecture, Islamic Azad University, Science and Research Branch, Tehran, Iran (Corresponding Author).

Received 30 January 2021; Revised 31 December 2022; Accepted 03 January 2023; Available Online 20 March 2023

ABSTRACT

Nowadays, high urbanization growth has made many problems for human society and urban fabric, while urban planners do not have any suitable solution to solve the emerging problems of cities. The urban acupuncture approach means small-scale and low-cost interventions in sensitive and effective points, which can be used as an appropriate solution for improving historical fabrics' status. The extant study aims to apply urban acupuncture and the unique potentials available in the historical fabric of Sanandaj City, Iran to formulate some strategies for regeneration and increase vitality in this city. This study used a qualitative method to apply the urban acupuncture approach. To apply the urban acupuncture approach in the studied area, the considered principles were examined and divided into three categories: analysis and scrutinization (review of the area), determination of intervention points, and targeted measures. This study was conducted through the following steps: collecting library and bibliographic data, designing intervention zones' maps, reviewing the problems existing in the research area using Nordic Musculoskeletal Questionnaire, analyzing problems based on the OWAS method, and generating the intervention points map. The statistical society of this study comprised residents living in the historical fabric of neighborhoods in Sanandaj City, which its data directly affects the research results. The findings indicated that urban acupuncture could provide significant changes, such as improved quality of life, presence of residents and tourists in neighborhoods, developed local economy, increase creativity, and alleviated social inequality by using some factors, including small-scale intervention, potentials available in neighborhoods, residents' participation, cultural factors, and so forth.

Keywords: Urban Acupuncture, Historical Fabric of Sanandaj City, Urban Regeneration, Nordic Musculoskeletal Questionnaire, Analytical OWAS Method.

* This article is taken from the studies of the master's thesis, belongs to the first author, entitled "Strategic planning for urban regeneration using interventions in sensitive and effective points: the case of Sanandaj's historical area" with the guidance of the second author, that has been done at Islamic Azad University Science and Research Branch, in 2021.

** E-mail: shieh.abbas@gmail.com

1. INTRODUCTION

Cities are the greatest human inventions, and more than half of the world population now live in cities (Marzi and Ancona 2004, 1). Development of cities and their increased population rates led to various problems, such as physical deterioration and weak social bonds in cities, especially in old fabrics. In addition to physical impacts, this issue has imposed numerous social and economic consequences on urban neighborhoods (Mahdianpoor, Taghavi Zavareh and Saremi 2018, 31). Through its evolution trend, the urban revitalization process has reached an international approach, called urban acupuncture over the past decade. This approach has created a considerable change in cities and urban development understanding by incorporating public participation into the urban management strategy (Chan 2017, 1). This approach was introduced in 1960 and used by a Spanish architect, called Manuel-de Sola-Morales to revive the urban fabric of Barcelona in 1970 (Marzi and Ancona 2004). Jaime Lerner is the second person to explain that cities are increasingly expanding, changing, and growing, so urban intervention must be selected in a way that targets strategic points and accelerate the planning process (SILVA MORA 2013). Marco Casagrande from Finland is the last person who took effective measures in this approach. In his opinion, urban acupuncture is a bio-urban theory, which integrates sociology and urban design with the traditional Chinese medicine theory. This approach creates intervention for certain small-scale points. These points tend to create small and effective waves transferring them to other areas and causing large-scale impacts. Casagrande also states that urban acupuncture always aims to make a relation with specific local knowledge of the area under intervention, and the flexible and fundamental nature of this method alleviates the industrial stress in the city transforming it into an organic city (Casagrande 2015, 7-8). This intervention links planners and urban managers but also connects citizens to urban spaces. Therefore, all of these factors interact with each other leading to the creation and revival of pleasure and dynamism in cities (TANG 2015, 14). This study aims to identify and revitalize intervention points in the research area to use its available energy that affects the considered point and the whole fabric improving quality of life (Marzi and Ancona 2004, 2). The historical core of cities is the initial focus and the beating heart of each city. In this lieu, urban development gradually leads to inattention to problems, form and structure transformation, evacuation of city centers, and forgetfulness of city identity (Karamipour 2009, 2). In general, small-scale interventions in urban spaces highly improve the quality of life or residents, decreases stress level, and strengthens the relationships between dwellers of a neighborhood. Although this approach is not

considered definite healing, it may create broader changes rather than what is assumed at the first step (Lastra and Pojani 2018, 2).

2. LITERATURE REVIEW

This part of the study addresses the research concepts and variables, including regeneration, urban acupuncture, urban acupuncture background, principles and metrics used in this research, and so forth.

2.1. Regeneration in Historical Fabrics

The historical fabric of cities has a unique position in the spatial and functional structure of cities due to its old background, precious historical elements, suitable communicational situation, location of the main bazaar of the city, and other options. Despite having outstanding specifications, these fabrics have faced many evolutions and gradually experienced failure and disorder in different dimensions. In line with mentioned issues and their effects on different scopes, historical fabrics and the removal of their unsustainability have become a serious and underlying subject in cities (Safdari, Pourjafar and Ranjbar 2014). Regeneration of the historical fabrics of cities can provide the field for the internal development of cities, physical and social-cultural revival, and preservation, and be an important factor against natural destructions and measures planned by profiteers (Pourahmad and Akbarnejad 2011).

2.2. Urban Acupuncture Approach

The term "urban acupuncture" consists of two parts: acupuncture (noun), which is a kind of treatment for the disease, and urban (adjective) (SANTOS 2018, 953), and has been adopted from ancient Chinese medicine. This method is used for intervention on a small scale and specific points in the region to activate and update the potential. It is possible to create vitality in the society and environment by using flexibility and efficiency specifications in the urban acupuncture approach (Shadin and Xile 2010, 1). Instead of large-scale changes and evolutions, urban acupuncture suggests small incentives and projects to receive response (Houghton, Jeong and Lugmayr 2015, 1). Overall, scientists that work on this approach believe that cities can organize their activities without requiring any central authority, and also can respond to the injuries hurt them. According to this understanding, it is concluded that the urban acupuncture approach is an important technique because it can respond to and heal the injury that occurred in the city's skin (Pascaris 2012, 16).

2.3. Urban Acupuncture Approach's Background

Hundred years ago, when China began planning its cities, the limited space of the city could not meet the demand of the increasing population, and the city was

damaged by the industrialization effects. Barcelona's government faced the same problem of China government, and the city center was destroyed in the transition from the industrial to the post-industrial era. The urban renewal plan of Barcelona was known through the urban acupuncture approach in 1980. This approach stimulated the considered point reviving their functions, and involve different energy circuits and different NGOs that improved the quality of life and intra-neighborhood relationships in Barcelona (Minhao et al. 2014, 3). In 1999, a conference called UIA was held in Beijing, and Kenneth Frampton proposed seven suitable agendas for the new era of architecture and planning in cities. The sixth paragraph of this agenda introduces a strategy, called urban acupuncture to increase force in some specific urban points (Prifti 2012, 2). In this conference, Frampton introduced Manuel-de Sola-Morales as the first person who mentioned the acupuncture concept. Jaime Lerner from Brazil was the second person in the TED conference (2007) who claimed that this approach was applied in most of his projects converting the crowded, polluted city of Curitiba

which was full of crimes to a modern and green city with social novelty. Marco Casagrande from Finland is the last scientist that many believe that he has introduced the urban acupuncture theory. Although Morales and Lerner are pioneers of this theory, Casagrande revealed new dimensions (relationship between man and nature). He also selected the term "3rd generation city" for post-industrial cities, prevented the destruction of the natural environment in favor of architectural structures, and introduced the city as an organic organization (Hoogduyn 2014, 13-14).

2.4. Different Views on the Urban Acupuncture

Manuel-de Sola-Morales, Gordon Matta-Clark, Oriol Bohigas, Jaime Lerner, Marco Casagrande, Helena Casanova, and Jesus Hernandez are the most influential authors that studied this approach (SANTOS 2018). Table 1 reports the outlooks, views, and measures taken by these theorists in the case of the urban acupuncture approach.

Table 1. Views on Urban Acupuncture Approach Theorists

Theorists	Outlook	Views and Measures are taken for the Acupuncture Approach
Manuel-de Sola-Morales	Urbanization, Urban Development, and Continuous Urban Network	<ul style="list-style-type: none"> - He assumes the city as a human body consisting of skin and interconnected structures paying great attention to intervention and healing starting points. - In his opinion, the most sensitive points in cities are the most neutral regions with high and hidden potentials.
Matta-Clark	Reviving the Abandoned Points and Buildings	<ul style="list-style-type: none"> - His measures are taken locally through the revitalization of abandoned buildings in remote regions leading to tourist attraction and dynamism of considered points.
Oriol Bohigas	Activating the Public Spaces, Reducing the Importance of Urban Master Plans, and Paying Attention to Citizens' Culture	<ul style="list-style-type: none"> - Alleviating the importance of the urban master plans and improving measures on small scale for urban spaces, especially public one - Reviving more than 100 open public spaces on small scale and activating the surrounding spaces - Measures were taken based on the improved identity, culture, and profile of citizens
Jaime Lerner	Human City, Citizen Participation, Sustainability, and Smart City	<ul style="list-style-type: none"> - Creating social structure and public participation, high speed and accuracy, identity preservation, application of art and creativity, using empirical methods, and constructing new spaces by using this approach - In the opinion of Lerner, sensitive points are sick and improper points with urban problems.
Marco Casagrande	Human and Nature, Ecology, Sustainable Urban Development, and Third-Generation City	<ul style="list-style-type: none"> - City behaves as an organic system, and architecture is just a minor part of nature, and acupuncture indeed is the urban nature integrity in his opinion. - He considers urban acupuncture an informative and attractive measure in the architecture field taking feelings ruling the city into account.
Helena Casanova and Jesus Hernandez	Expression of Strategy and Intervention to Activate City Life	<ul style="list-style-type: none"> - In particular, they link urban acupuncture to public spaces and assume that participation and creation of place are the most strategies of urban acupuncture to achieve effective urban spaces.

(Tang 2015, 6-13; Santos 2018, 953; Yimeng 2015, 17)

2.5. Principles and Dimensions of the Urban Acupuncture Approach

The main principle of this social-environmental theory leads to life continuity and city improvement. According to this approach, strategic points of the city are the cores that gradually provide the field for greater changes through targeted interventions on

small scale (Apostolou 2015, 3). Jaime Lerner asserts that the urban acupuncture approach must include some valuable principles and dimensions, such as simple practice, instant effect, reasonable cost, etc., and should be used for implementation (Ancona and Marzi 2004). Table 2 briefly reports the principles of the urban acupuncture approach:

Table 2. Principles of Urban Acupuncture Approach

Principles	Explanations
Holistic Approach	The required data comprises all elements needed for environmental evaluations associated with all environmental, economic, cultural, historical, and other data.
Citizen Participation	The local perception and knowledge must be applied for successful changes to operationalize the decision-making processes. In top-down projects, dwellers are not designers, but their ideas and participation lead to project success, while citizen participation plays a vital role in bottom-up projects.
Small-Scale Intervention	Intervention must have a small operation scale and inclusive impacts due to funding constraints.
Determination of the Sensitive Point	Determination of sensitive and important points is the first step to urban acupuncture expressed by Morales, which are seen as sick urban points from the viewpoint of Lerner, points with hidden energy (e.g., compost mass) according to Casagrande, and points with minimum potential in the opinion of Morales.
Quick Act	Lerner insisted on applying quick acts for operational plans because he believes that people become discouraged if the operational plan is prolonged.
Scenario	Scenario helps decision makers to consult with others and make the best decision based on the consensus and implement their operational plans. this principle is vital, particularly in top-down projects to anticipate the project procedure and encourage participation between dwellers.
Creating Places	In the opinion of Morales, creating places means releasing neglected potentials in a place and empowering them, while Lerner defines it as using potentials available in a place.

(Hoogduyn 2014, 19-20)

According to the explanations presented in Table 2, some dimensions must be examined then relevant data should be collected and analyzed to address each principle. In general, the application of urban acupuncture requires simultaneous use

of the mentioned principles. Table 3 reports some information about the operation, dimensions, assessment, understanding of principles, and outcome of each step.

Table 3. Application of Principles and Dimensions of the Urban Acupuncture Approach

Operation	Principles	Dimensions	Assessment of Principles	How to Collect Information Required for Principles	Why Principles are Used	Outcome
1. Analysis and Scrutiny	Holistic Approach	Historical studies; bibliographic studies; demographic studies; economic studies; environmental studies; cultural and identity studies; urban space studies; user and action studies, access and transportation network studies; physical studies	Primary knowledge about the studied area through library studies, review of GIS maps, information published by statistics organizations, and questionnaire analysis	Awareness of problems and potentials in the area	To know the studied area and find its problems and potential	The maps of important zones for intervention
	Citizen Participation	Social studies	Examining citizen participation in different affairs related to their residence place	Acquire information through questionnaires and library studies		

Operation	Principles	Dimensions	Assessment of Principles	How to Collect Information Required for Principles	Why Principles are Used	Outcome
2. Determination of Intervention Points	Small-Scale Interventions	Considering the fund- ing constraint	The main phase of this approach is the determination of in- tervention points and applying small-scale interventions in its sensitive points.	Using the data col- lected through field studies and question- naires in important zones for intervention to find sensitive inter- vention points	Conclu- sion based on the research findings	Intervention points' map
	Determination of Sensitive Points	Review ideas of bene- ficiaries; discover the sick points				
3. Targeted Measures	Scenario	Examining the trust between government and other individuals, and trust building	Encouraging res- idents by making them aware and interested in doing targeted measures in intervention points	Asking citizens to participate in inter- vention fields, re- viewing ideas, and making them aware of decisions made for intervention points	Used for the conclu- sion and suggested solutions	Recom- mendations for targeted measures in intervention points
	Quick Action	Assessing the respon- sibility of governmen- tal institutes	Required for targeted measures after deci- sion-making, quick action to create a new place and reduce dis- couragement	Using assistance and opinions of residents to do small-scale and valuable measures in intervention points		
	Creation Places	Minimalism; val- ue-orientation; pro- gressive recovery				

2.6. Global Experiences of Urban Acupuncture Approach

The origin of this approach is in Barcelona but its main idea is rooted in Chinese acupuncture. Hence,

most of the measures taken in this approach pertain to China. Table 4 reports the problems, objectives, performance, results, and principles used in the projects, that used this approach worldwide.

Table 4. Global Experiences

Project	Problem	Objective	Performance	Advantages of Approach
Dream Lilong Houses	The high density of houses, low quality of life, the high value of land, have forgotten the historical identity of the neighborhood	Improving residence status in old settlements, fabric regeneration	This project invited people to be inspired and improve their living place by showing TV programs and some measures	Media play the role of the needles used in acupuncture that progressively develop the settlement situation
Hutong Parklet	Minor commercial role; inattention to historical identity; gradual destruction of the fabric	Revival of the commercial role of neighborhood	By installing parklets and other things, such as creating shelters, planting flowers, etc.	Installation and development of parklets progressively led to the advent of valuable public space in the neighborhood.
Tianzifang passage	Immigration of old neighbors leaving the area; a living place for disabled people; high population rate	Using advantages of the area and its traditional culture	Conversion of an old and abandoned factory to a growth and creativity center	Increased number of studios and art galleries that affected the whole area gradually.
Creative Villa	Social-economic inequalities; lack of social cohesion; informal and non- standard towns	Social integration and cohesion; improved housing status; health and culture, creation of sustainable development	Using some simple measures, such as wall painting (murals), furniture repair, creating decorative objects by using recycled materials; creating cultural and educational centers	Leading to the revival of the whole neighborhood fabric; a positive impact on the urban managers' ideas; fund allocation by the municipality

Project	Problem	Objective	Performance	Advantages of Approach
Wire Opera	Improper and difficult access to the surrounding green space of an abandoned mine	Revitalization of considered neighborhood; creating an urban park in the considered place; creating an attractive public place	Building an Opera house using recycled materials; creating a man-made lake	It revived the considered point, and also affected the surrounding neighborhoods and even the city; becoming one of the symbols of Curitiba City
The Treasure Hill	Informal town; lack of suitable urban infrastructures	Preserving human energy available in the place; protecting the nature and environment	Collecting abandoned wasters; agriculture in the abandoned area; renewal of connection ways; creating places with beautiful landscapes with nature view	Improved quality of life of residents; changing the area to an attractive place in Taiwan; converting the destructed urban space to an urban pleasure area
Cerda's Barcelona plan	Improper health status and public places; increase the population	Revival and expansion of pleasure and vitality in public spaces and neighborhoods; converting Barcelona from an industrial city to an international city in case of tourism and culture	Formulation of Cerda's Barcelona plan; creating service areas and urban facilities	Improved public spaces; creating and improving parks and green spaces; creating friendly places

(Chen 2015, 16-19; Sun 2015, 36-38; Shen 2015, 61-63; Santos 2018, 942-945; Prifti 2012, 14; Tang 2015, 9-12; Minhao et al. 2014, 6-7)

3. METHODOLOGY

This study used a qualitative method. This method is used when a problem requires analysis and scrutinization (Danaeefard and Kazemi 2017). Qualitative research includes a set of activities, such as observation, interview, and participation in research activities, which help researchers to obtain new information about the subject (Delawar 2006, 259). Qualitative studies include three major parts: the first part collects the research data from different sources, such as interviews, observation, and participation. The second part comprises analytical and interpretive methods used to achieve findings or theories, and the third part presents the reports obtained from the research (Kavousi and Bayanati 2014, 132). The relevant data were gathered through library and field methods to do this qualitative research. The data of the theoretical framework were collected by using the bibliographic method of reviewing related documents and references. In addition to the library or bibliographic studies, field observations, interviews, and questionnaires filled out by citizens are used to identify the research area and its potentialities or problems. The relevant questions are reviewed in the frame of the Nordic Musculoskeletal Questionnaire (NMQ) (Fig. 1) to find problems existing in the research area. The NMQ is used in safety engineering science to standardize the analysis and record of musculoskeletal symptoms and disorders. This questionnaire is used to assess the general status of workers who work in workshops,

mines, and other places under hard conditions. This questionnaire has been designed to find the physical conditions of workers by the safety and health executive (HSE) (Nasl Seraji and Kachorian 1999). Accordingly, cities are living organisms, and their historical fabrics are the skeleton and ossification of the city; therefore, it is essential to evaluate the general condition of neighborhoods like the workers working under hard conditions by simulating items of the Nordic questionnaire and receiving information of people living in those neighborhoods.

In qualitative studies, the sample size is measured based on the research objective and the researcher's opinion; however, the sample size of most cases comprises 4-40 respondents. The questionnaire of this research was distributed among 60 residents living in the historical fabric of neighborhoods located in Sanandaj City. These respondents included 55% women and 45% men. This questionnaire was distributed among residents of neighborhoods and evaluated in two parts of morning and evening in October 2020. In terms of age, 54% of interviewees had an age range of 25-34. More than 90% of interviewees were educated. More than 60% of interviewees have been living in the neighborhoods at least for 10 years. The results obtained from the questionnaire (in the frame of the Nordic Questionnaire) are identified and examined by the residents as the primary result of problems in the historical fabric. This questionnaire is used as a tool for screening and identifying the most important disorders and problems in the area.

Title	This part is answered only by those who have had musculoskeletal problems	
Any type of pain or trouble during the last 12 months	During the last 12 months have you been prevented from carrying out normal activities in the workplace or even in the house due to this trouble?	Have you had trouble or pain during the last 7 months?
Neck Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Shoulders Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Elbows Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Wrists/hands Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Upper back Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
Lower back Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
One or both thighs Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
One or both knees Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>
One or both ankles/feet Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>	Yes <input type="checkbox"/> No <input type="checkbox"/>

Fig. 1. Nordic Musculoskeletal Questionnaire

This study used the OWAS¹ method to examine the workplace and collect basic data on each occupational group working in hard jobs. This method reviews improper postures of the body during work and stresses imposed on the musculoskeletal system in each occupation group separately within a certain duration. The results of this method prioritize each occupational group based on the work intensity and resulting issues to improve their job status (Nasl Seraji and Kachorian 1999, 53). As mentioned before, the city is an organism; hence, the Nordic questionnaire's results can be used to examine the problems existing in historical fabric neighborhoods

by using OWAS method. In this method, the problems expressed by residents in the Nordic questionnaire are separately reviewed in each neighborhood by using field observations. This method prioritizes the neighborhoods based on their problem intensity to provide intervention using an urban acupuncture approach. This method is indeed a background used to identify problems in the area and find the best healing points, by using the urban acupuncture approach. Finally, geographical information system (GIS) is used to design important zones for intervention and intervention points (Fig. 2).

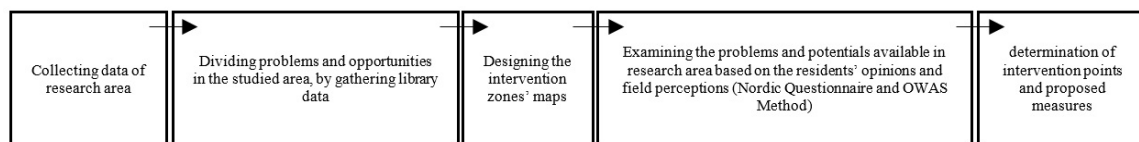


Fig. 2. Research Process

4. STUDIED AREA

The historical fabric of Sanandaj city is approximately located in the city center (Fig. 3), and its original core has been shaped by the effect of various political, military, natural, and other factors. This area has a valuable position in the city in terms of history, culture, and identity providing a precious potential for planning to regenerate the historical fabric of this city (Fajr-e-Tosea Consultant Engineers 2009). The historical fabric of Sanandaj (Fig. 4) has six neighborhoods: Miyan Ghaleh (the original core of

the city), Sratapooleh, Chahar Bagh, Agheh Zaman, Ghataarchian, and Gendarmerie. This is an area with a 11342 population (census of 2016), which is around 3% of the total population of Sanandaj covering an area of around 90 hectares. The identity and historical character of this area is outstanding due to valuable elements existing there, such as historical Asef and Sanandaji Bazaars, precious mosques (Daralahsan, Daral Aman, etc.), museum (Asef museum Palace, etc.). many precious passages, such as Ferdowsi Sidewalks, Imam, Taleghani, and Enghelab streets are located in this area.

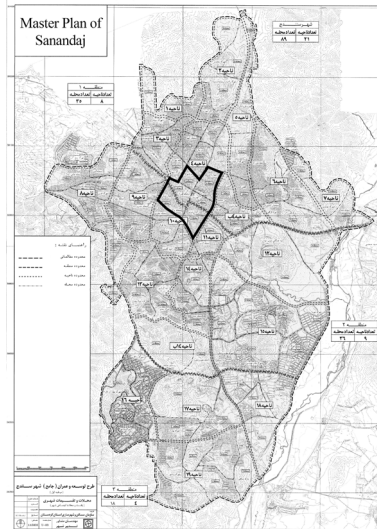


Fig. 3. Sanandaj City
(Tadbir Shahr Consultant Engineers 2006)

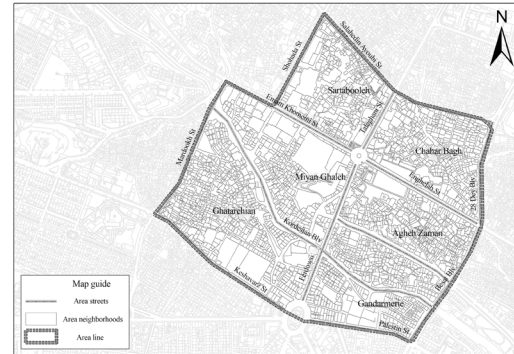


Fig. 4. Neighborhoods of Historical Fabric of Sanandaj

5. DISCUSSION AND RESULTS

Urban acupuncture aims to apply constructive development in both intervention points and other relevant scopes by doing small-scale interventions. The main purpose of this approach is to create social motion; therefore, interventions must be done in a way that makes residents and tourists interested in being present at intervention points. According to Figure 5, the considered principles were examined within three categories (analysis and scrutinization (knowing the area), determination of intervention points, and targeted measures) to apply the urban acupuncture approach in the studied area. This first phase summarizes all studies conducted on different environmental, economic, and other scopes. The

results of this step help to find problems and potentials of the area, which leads to designing the map for problems, potentials, and important zones for the intervention. The second step plans and determines intervention points, which is the most effective step in the acupuncture approach. The main point of this step is the review of opinions and suggestions of citizens in important zones for intervention; hence, accuracy and knowledge about the research area is the underlying principle of this step. The last step includes planning for operating intervention recommendations in the points determined for intervention. This step requires making citizens aware of and persuaded that quick action and the creation of valuable places are results obtained from recommended intervention (scenario).

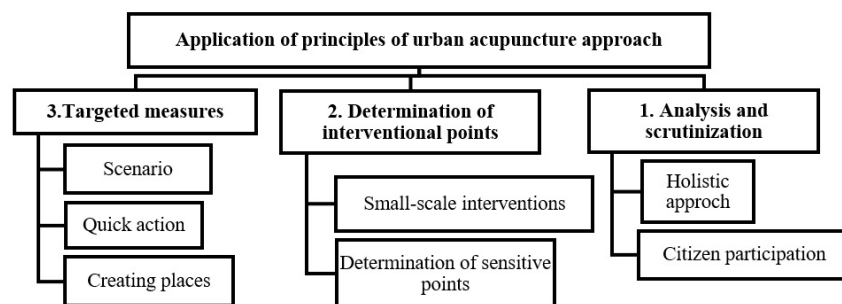


Fig. 5. Steps to apply Urban Acupuncture Approach Principles in the Historical Fabric of Sanandaj

5.1. Analysis and Scrutinization

All assessments done in the frame of economic, demographic, participatory, environmental, and other

information have been summarized and evaluated within two parts of problems and potentials as reported in Table 5.

Table 5. Problems and Potentials Existing in the Historical Fabric of Sanandaj City

	Studies	Collected Data
Problems	Demographic	<ul style="list-style-type: none"> - Reduction in population rate during 2006-2011 and increasing it during 2011-2016 in Ghatarchian, Miyan Ghaleh, Sratapooleh, and Gendarmerie neighborhoods; - Descending the growth of population in two Chahar Bagh and Agheh Zaman neighborhoods converting the residential houses to abandoned buildings or transforming them into commercialized warehouses; - The high net density of the population in the historical fabric of Sanandaj City.
	Safety and Security	<ul style="list-style-type: none"> - Narrow passages with an irregular shape, abandoned and destructed lands and buildings, defenseless spaces, uses that are not matched with residential neighborhoods, lack of access hierarchies, rider-pedestrian interference, lack of sufficient street lights, dead-end alleys; - Improper security in Sratapooleh and Chahar Bagh neighborhoods compared to other neighborhoods.
	Use	<ul style="list-style-type: none"> - Lack of per capita service, recreational, and green space uses in neighborhoods and historical fabric; - High per capita rate of administrative and police uses on the urban scale.
	Accessibility and Transportation Network	<ul style="list-style-type: none"> - Overemphasis on rider motion and traffic problems in internal spaces of neighborhoods; - Narrow passages, weak public transportation system, the concentration of commercial activities, lack of decentralization, interconnected passages, lack of parking lots, irregularity and interference of rider and pedestrian motion, and other issues.
	Quality of Buildings	<ul style="list-style-type: none"> - Low structure strength of buildings located inside the fabric, using unsustainable materials, long lifecycle of residential apartments; - Some problems, such as construction limitations in the privacy of historical monuments, construction measures, etc.
	Economy	<ul style="list-style-type: none"> - Transforming the residential uses around the bazaar to the warehouse of commercial units; - Lack of services and facilities inside the neighborhood and inactivation of the local economy.
	Participation	<ul style="list-style-type: none"> - Medium-level participation of residents, which is a problem requiring governmental organizations to win the trust of citizens; - Residents' indifference toward their surrounding environment.
Potentials	Economy	<ul style="list-style-type: none"> - The main bazaars of the city are located in two Agheh Zaman (Asef Bazaar) and Chahar Bagh (Sanandaj Bazaar) neighborhoods, and the Hajar Khatoon market is located in Sratapooleh neighborhood; - Active commercial niches located around the streets leading to Enghelab square; - Presence of precious elements, such as Moshir Divan Mansion, Asef Mansion, Habibi House, Sanandaj Museum, Shisheh Bath, Hajar Khatoon Mosque, Pir Omar Mosque, etc.; - An active field of handcraft activities, such as backgammon, customs, etc.; - Transforming Sanandaj into a creative music city in 2019 was a factor in the development of tourism and the economic boom.
	View and Landscape	<ul style="list-style-type: none"> - Beautiful views and landscapes in some neighborhoods of historical fabric towards the Abiudar Mountain Range, valuable historical elements, etc.
	Culture and Identity	<ul style="list-style-type: none"> - Presence of signs (mosques), monuments (historical museums and buildings), nodes (Azadi and Enghelab squares), identity neighborhoods (Agheh Zaman, Sratapooleh); - The specific architecture of neighborhoods considering the cold climate and special topography of neighborhoods; - Powerful social bond and respecting cultural and social rituals in Kurdish culture; - Paying attention to urban and public spaces and streets with extroversion, aesthetical, social, active, and seeker specifications.
	Urban Space	<ul style="list-style-type: none"> - Activity nodes (market), active urban streets (Emam Street, etc.), valuable squares (Azadi and Enghelab), and Ferdowsi sidewalk and local squares located in neighborhoods.
	Precious Historical Monuments	<ul style="list-style-type: none"> - More than 350 precious old houses, bazaars, mosques and religious centers, baths, etc.; - The unique physical structure of neighborhoods (stepped architecture), as well as unique alleys and passages.

Two zoning maps of potentials (points with hidden energy) and problems (sick points) existing in the area must be generated and assessed in the overlapped frame for general assessment and determination of intervention points in the studied area by consideration of theorists' viewpoints. Figure 8 considers the importance rate of two Figures 6 and 7

equal to determine the valuable zones for intervention using the urban acupuncture approach. As can be seen, all neighborhoods have required conditions for intervention through the urban acupuncture approach, while the most important case is the selection of accurate intervention points in these zones.



Fig. 6. Available Potentials

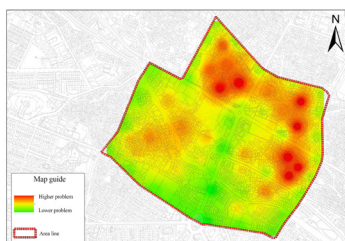


Fig. 7. Problems

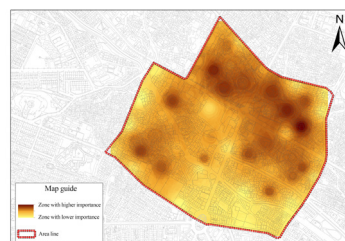


Fig. 8. Important Zones for Intervention

5.2. Determination of Intervention Points

According to the principles, the first step of healing is to find the most suitable point for inserting a needle (sensitive points) in important zones for intervention. Following theories proposed by pioneers, Lerner considers sick urban points (with problems) as the most suitable points while Casagrande and Morales assume that points with hidden energy or lowers energy (potentials) are the most suitable points. Urban acupuncture usually is used in a place where a kind of contradiction exists, such as old and new coexistence, traffic problems caused by modern life, developed and undeveloped regions, and so forth. Hence, the considered place must have the potential to become an efficient place. Therefore, the measures must be taken under the supervision of residents' views, field observations, etc. to plan the best points for smart interventions.

The historical fabric of cities has been affected by hard-working conditions tolerating the traffic,

economic, social, and other loads of the whole city through time. Like a sick human that requires healing, a city also faces many problems that should be solved and removed. Application of the Nordic musculoskeletal questionnaire's items in the historical fabric of Sanandaj City can be a general exploration of its physical health providing a holistic view of health status and types of problems. The results obtained from the questionnaire allow the researcher to find which one of the problems can gradually alleviate the immigration of citizens and the destruction of the fabric. Table 6 reports the frequency of problems in the historical fabric of Sanandaj city expressed by residents. Accordingly, most of the problems reported by the residents stem from the physical status, lack of facilities, urban services, and so forth in the neighborhoods, which gradually led to the immigration of citizens and the destruction of historical fabrics. Figure 9 depicts the intensity of each problem in every neighborhood separately based on the residents' opinions.

Table 6. Frequency (%) of Problems based on the Nordic Questionnaire

Dimensions	Problems Existing in the Neighborhood based on the Residents' Viewpoints	%	Dimensions	Problems Existing in the Neighborhood based on the Residents' Viewpoints	%
Demo-graphic	High immigration rate of residents with long settlement background	36.66	Access	Improper access and high slope of passages	26.66
Social	Lack of residents' responsibility for their neighborhood	28.33		Lack of safety and rider-pedestrian integration	41.66
	Lack of security and the presence of addicts and delinquents	33.33	Physical	The high number of abandoned and destroyed buildings and barren lands	36.66
Use	Lack of green space and facilities for leisure time	41.66	Management	Negligence of responsible institutes toward the neighborhood	26.66
	Inappropriate and incompatible activities and jobs	25		Lack of suitable light at night	38.33
	Lack of service facilities	23.33		Lack of privacy for historical places and construction limitation	35
	Lack of parking lots	43.33	Economic	Lack of intra-neighborhood economy	30

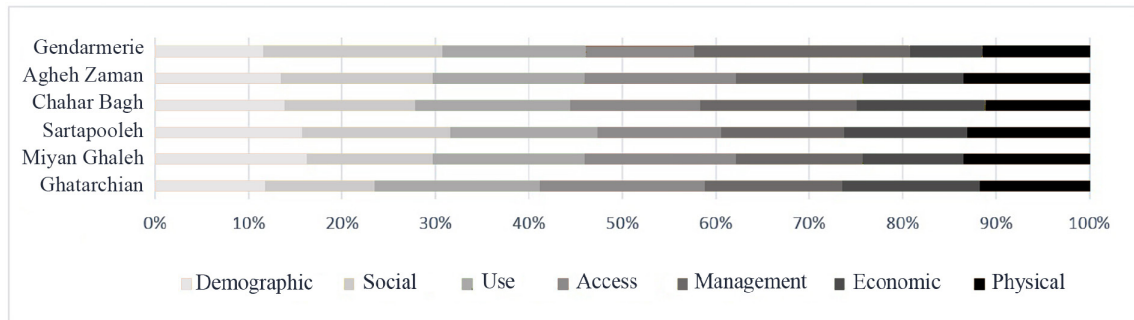


Fig. 9. Frequency (%) of each Problem in Neighborhoods

After finding problems expressed by residents using the OWAS method, each problem was reviewed (Table 6) in each neighborhood through field

observations. This method indeed addresses effective factors intensifying each problem accurately and separately (Table 7).

Table 7. Qualitative Assessment of Problems and Prioritizing Intervention in each Neighborhood

Problems	Neighborhoods					
	Ghataarchian	Miyan Ghaleh	Sratapooleh	Chahar Bagh	Agheh Zaman	Gendarmerie
Physical	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Economic	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Management	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Access	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Use	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Social	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Demographic	Very Bad	Very Bad	Very Bad	Very Bad	Very Bad	Very Good
Prioritizing neighborhoods for intervention	5	1	2	4	3	6
Guide:	Very Good	Good	Average	Bad	Very Bad	

According to the results of this method, the inappropriateness of physical status and access in internal parts of the neighborhoods is the most important problem in these places. These two factors reduce the quality of life and insecurity in neighborhoods; moreover, insecurity causes other economic and social issues. Findings obtained from the questionnaire and analytical OWAS method indicate that all neighborhoods located in the historical fabric of Sanandaj face many social, economic, physical, and other aspects, but the older the neighborhoods, the more intense the problems will be. In general, four neighborhoods of Miyan Ghaleh, Sratapooleh, Chahar Bagh, and Agheh Zaman that are older fabrics face more severe problems. This method is used as a prerequisite for the accurate identification of problems in the area and for finding the most suitable healing points through the urban

acupuncture approach. Urban neighborhoods become livable and dynamic through some factors, such as economic prosperity and the active presence of residents living in the neighborhoods; however, lack of security, lack of suitable urban spaces, and active intra-neighborhood economy prevent this process in all of these neighborhoods. According to the viewpoint of this approach, the targeted points in urban acupuncture must be planned in a way leading to the presence of individuals and the development of this point and other affected points. Therefore, this measure can be taken through the revival of sick points by discovering and using potentials available in each neighborhood. The potentials of the neighborhoods have been summarized and evaluated by using field observations and ideas of citizens living in each neighborhood (Table 8).

Table 8. Opportunities, Hangouts, and Valuable Signs from the Viewpoint of Residents and Field Observations

Neighborhoods	Valuable Opportunities and Signs based on the Residents' Viewpoints	Hangouts Available in Neighborhoods from the Viewpoint of Residents	Valuable Opportunities and Signs based on the Field Observations
Ghatarchian	Proximity to the main bazaar; the existence of historical monuments and mosques; Firoozeh Bath; Naghareh Khan Alley	Sepidar Park; Rizan Alley; Keshavarz Streets' stores; the area in front of residents' houses; entrance gate of grocery stores located in the neighborhood	Residents' interest in their neighborhood and participation in governmental institutions; beautiful view and landscape of some points and alleys; stepped alleys and unique entrance gates; unique architecture and fabric compatible with the culture and climate of Kurdistan; ancient mosques (Ghooleh, Tooba Khanom, etc.) and buildings (Vakil Mansion, Azmoodeh Ardalan House, etc.); traditional café and restaurants; Ferdowsi Sidewalk; transforming Sepidar Park to music park
Miyan Ghaleh	Suitable access to services and the city center; precious historical buildings and mosques	Shariatmadar Mosque; in front of the wholesale store of Emamzadeh Pir Omar Alley; in front of Sadegh Vaziri High School	Existence of some points with beautiful views and landscapes (old hill of officers' club); mosques (Daral Aman Mosque, Hassani Jahan Khanom Mosque, etc.); beautiful views and landscape of Ferdowsi Sidewalk towards Abidar Mountain, and Azadi and Enghelab Square statue
Sratapooleh	Historical monuments (Kord House, Moshir Divan, precious mosques)	Entrance gate of Asef Mansion and Moshir Divan Mansion; Emamzadeh and Hajar Khatoon market	Ancient and valuable passage of Hajar Khatoon; cultural and art row of Shohada Street (making and selling backgammon and music instruments, bookstore); mosques (Khorshid Lagha Khanoom, Hosseynieh, etc.), and old mansions (Rahimzadeh House, Malek Al-tojjar, Shahabi, etc.)
Chahar Bagh	Proximity to the city center; main market of the city; Abdolkhalegh Mosque and Bath	Mosques and religious places; squares located in the market and neighborhood	Traditional restaurants (Jahan Nama), traditional café-restaurant (Abdolkhalegh Bath); gold sellers' row; cloth sellers, carpets and rugs in the market; mosques (Darroogheh, etc.), and old monuments (Synagogue, Khan Bath, Pirmoradi House, etc.)
Agheh Zaman	Proximity to the city center; main market of the city	ferry crossing (Nav Gozar) (market entrance); frontage of residential houses	Cloth sellers' row and Alidi House in Asef Market; old inn; Ferdowsi Sidewalk; mosques (Rashid Ghale Beygi, etc.), old buildings (church, Ahmadvadeh House, etc.)
Gendarmerie	Proximity to the city center and Azadi square	-	Ferdowsi Sidewalk, the row where traditional sweets are sold (Koonji Gazoo, Nan Berenji, Kaak), beautiful view and landscape in some points of the neighborhood

Finally, sensitive points for intervention (Fig. 10) were determined through integrated information gathered from residents, field observations, and important zones' maps. This map tries to indicate the importance rate of this approach by determining the accurate location of these points and their effects of them on their surrounding environment. Moreover, this map shows the effective factors that strengthen the intervention points by determining valuable potentials in each neighborhood (including religious, cultural art, service, commercial potentials, and valuable

views). Interventions applied in these points lead to energy flow in neighborhoods and subsequently in the historical fabric of Sanandaj. The branching paths of the energy flow created by these points indicate the effects of intervention points and their importance rate of them. These points can boost tourism and intra-neighborhood economy, and improve the physical conditions of buildings located in the neighborhoods through tourists' entrance and residents' sociability in internal parts of the neighborhood.

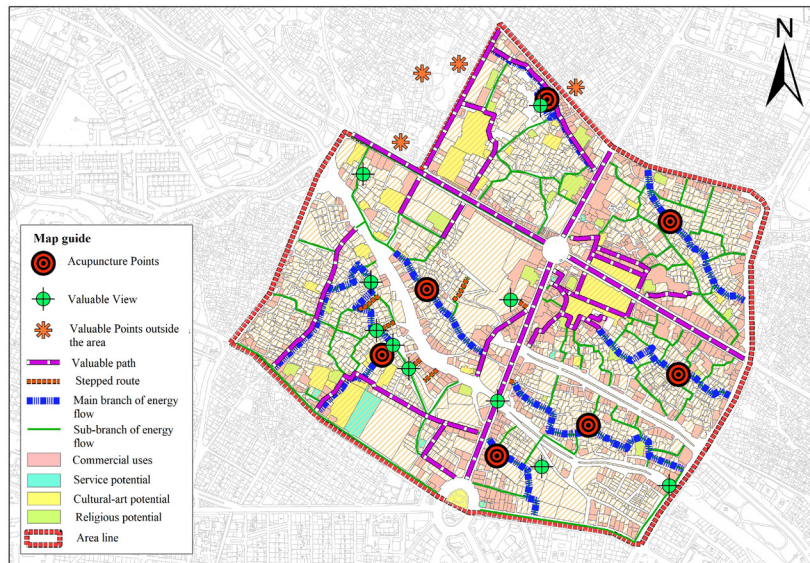


Fig. 10. Intervention Points of Urban Acupuncture Approach in Historical Districts of Sanandaj

5.3. Targeted Measures

The urban acupuncture approach aims to take targeted measures, consider intervention points, release the energy of that point, and spread its positive effects to other affected regions by adopting small-scale low-cost measures and quick actions. Sanandaj City has received great attention from tourists due to its beautiful nature, precious monuments, unique traditions and customs, and so forth. The mentioned factors have led to many names used to introduce this

city, including the city of mosques and prayer towers, the city of statues, the city with thousands of hills, and the creative city of music. Sanandaj City also plays a vital role in handcraft industries (espadrille weaving, rug weaving, backgammon, etc.), cooking traditional foods, sweets, and other things. This area can be developed according to these factors and application of them in the historical fabric of this city. The formulation of strategies and policies (Table 9) catalyzes the historical fabric leading to its prosperity and boom.

Table 9. Strategies of Urban Acupuncture Approach in the Historical Fabric of Sanandaj City

Strategies	Policies
Strengthening Natural and Built Landscapes	- Determining and improving those points with suitable views and landscapes in neighborhoods located in the historical fabric
Revival of Native Originality and Rich Culture of People	- Improving extroversion and hosting culture of Kurd people by presenting some services, such as cooking traditional foods, handcrafts, photography wearing customs, etc. in their houses
Promoting Cultural and Traditional Values of People	- Creating cultural and educational centers where residents teach their skills, such as handcrafts (backgammon, musical instruments, etc.), cooking, baking sweets, and other skills to each other, which revive the cultural values also develops the local economy and increases participation among citizens. - Renewal of traditional and original concepts by holding ceremonies and exhibitions, creating, and showing original symbols
Keeping the Historical Identity of the City	- Improving valuable and old monuments through renewal and maintenance of these buildings
Planning for Tourism Development in the Historical Fabric of Sanandaj	- Opening traditional cafés and restaurants to serve traditional foods and provide a temporary place for rest - Using precious external factors to attract tourists and invite them into the neighborhoods. These external factors include historical monuments, religious places, etc. - Defining entrance into neighborhoods by increasing legibility

Strategies	Policies
Improving the Role of Governmental Institutes among Residents of the Historical Fabric	<ul style="list-style-type: none"> - Winning trust and satisfying the citizen by public and private organizations can take some useful measures and make residents, who are significant pillars of decision-making, aware of the decisions made for their neighborhoods - Promoting the sense of cooperation of residents with governmental organizations through training activities (TV and radio programs of local channels)
Strengthening Participation between Residents and Influential Local Institutes	<ul style="list-style-type: none"> - Promoting a sense of participation in spontaneous measures among residents and private organizations to develop the neighborhood, improve accessibility, do creative actions for more beautification of their living place, etc.
An Increasing Sense of Belonging to their Living Place among Residents	<ul style="list-style-type: none"> - Using simple and inexpensive measures, such as painting walls of buildings and stepped routes, restoration of urban furniture, wall paintings, making decorative objects using recycled materials, etc.
Improving the Infrastructure of Local Channels	<ul style="list-style-type: none"> - Using virtual media to introduce valuable points, historical places, and uses that provide cultural services - Collecting attractive historical and cultural data about different factors available in the historical fabric of Sanandaj and converting them to some applications helping to know different parts of the historical fabric (buildings, value points, introduction to celebrations, shopping centers, etc.)
Development of Local Economy	<ul style="list-style-type: none"> - Public institutions' support for traditional domestic jobs (rug weaving, baking sweets, espadrille weaving, etc.) - Teaching and increasing the skill of labor by holding training workshops

Agreement and participation of residents in considered interventions are the most important factor that brings these strategies closer to the desired goal. Citizen participation indeed makes them willing to be present in urban spaces of their neighborhoods, while implying the meaning of the accurate function of urban acupuncture.

6. SUGGESTED SOLUTIONS AND SUMMARIZATION

The main recommendation of this study is to use the branding of cultural, art, religious, and other signs and symbols that can be introduced via social media to attract individuals and increase their sociability in the historical fabric of Sanandaj. The application of social media for the improvement of society and social capital indeed is a newly emerged incident that creates energy, interest, and prosperity in the studied area. The important point for content creation through social media is using local knowledge of residents about the settlement conditions, traditions, and other issues in their neighborhoods as the dominant culture of Sanandaj, because Casagrande insisted on keeping, strengthening, and expanding the local knowledge of Taipei regarding the urban acupuncture. After all, this case makes the city a living organism. Lerner expresses that cities must foster good ideas and implement them quickly. Creativity must be improved in the city to bring changes and renew the environment by keeping the identity and applying art and creativity in public places.

Field observations and the physical status of neighborhoods indicate that lack of service uses, urban spaces, and open spaces in the neighborhoods for the creation of recreational uses are the most important problems of the studied neighborhoods expressed by the residents. As mentioned above, Sanandaj is called the city of mosques and prayer towers because numerous mosques exist there; therefore, this potential can be used for use change of some of these mosques to create attractive tourism places and activities in these neighborhoods. As a strategy, urban acupuncture aims to revitalize and regenerate the urban environment. The main essence of this approach is rooted in the development and improvement of urban environment quality, which is done through intervention in selected points and the creation of interest in them to use potentials and bring positive effects.

7. CONCLUSION

The growth rate of cities has made decision-makers and urban planners manage these cities and use the best solutions to create efficient and desired urban areas for settlement. The sustainability and future expansion of current cities have been directly affected by the decisions made in the present time by urban managers for the preparation and growth of cities, as well as other urban scopes. Urban acupuncture approach is a modern and practical approach that can be used as a successful method to improve urban fabrics, especially those points that have

more urban problems. The extant study determines the intervention points and suggested strategies to improve the quality of life and regenerate the historical fabric of Sanandaj by applying principles and dimensions of the urban acupuncture approach. The mentioned principles are examined in three steps: knowledge, determination of intervention points, and targeted measures. Determination of sensitive intervention points is the most effective step in the urban acupuncture approach. The problems and potentials in the research area are collected through residents' ideas, bibliographic, and field studies to be used for selecting sensitive intervention points. According to the results of bibliographic and library studies conducted in the historical fabric of Sanandaj City, most of the problems occurred in the urban body and lack of urban services, which became the most reason for the immigration of residents leaving this area. Moreover, residents' opinions indicated that the highest frequency percent of problems was related to lack of parking lots (43.33%), lack of safety and rider-pedestrian interference (41.66%), lack of leisure time facilities (41.66%), the high number of abandoned and barren lands (36.66%), etc. Individuals' sociability can be improved in these neighborhoods by using available potentials, such as precious historical buildings, mosques, historical markets, views, landscapes, etc. as effective solutions for intervention points. According to the principles of Chinese acupuncture, one can create energy and cure sick points of the human body by inserting needles in these points. Therefore, the application of this approach in the city and effective measures in selected intervention points can make these points livable. Direct participation of residents in their neighborhoods' future through their opinions is necessary to discover their needs and select the most proper intervention and solution; hence, the Nordic questionnaire was used to collect the problems in a research area. The OWAS method is used in the next step to examine the problems expressed in the Nordic questionnaire through field observations and prioritize neighborhoods based on the destructive

effects of these problems on them and find the best intervention for each district. According to the results of the OWAS method, settlement duration is directly correlated with the intensity of problems existing in neighborhoods. Therefore, neighborhoods with longer settlement backgrounds have more priority for receiving the intervention.

Miyan Ghaleh is the first neighborhood of Sanandaj followed by Agheh Zaman, Chahar Bagh, and Sratapooleh are the most ancient areas that have unsuitable conditions, so must receive more interventions. The potentials of neighborhoods expressed by residents are points with hidden energy that can be used to develop and regenerate the internal areas of these neighborhoods. Finally, the valuable and effective potentials are detected by determining intervention and sensitive points. The determination of sensitive intervention points is located in the places where problems, potentials, or both of them are severe. The sensitive intervention points of each neighborhood have been selected to be sufficiently resistant to elimination, and also can cause the flow of energy in other points of the neighborhoods. Lerner believes that measures taken in the urban acupuncture approach must be done quickly like the gaps that are created in acupuncture because high speed and flexibility are advantages of acupuncture in cities. The recommended policies and strategies for intervention points have been formulated under the inspiration of the policies considered in global experiences mentioned in theoretical foundations, such as Hutong Parklet (creating valuable public space inside neighborhoods), Tianzifang passage (injection of precious uses), Creative Villa (taking simple measures for job creation and improvement of the physical status of the neighborhood) of SANTOS. Ultimately, it can be stated that cities are humans that are alive with vital signs. As stimulation of sensitive points in the human body leads to blood circulation in the body, it leads to the presence of people, dynamism, and revival r considered points in cities; therefore, this can be used as an intelligent approach for the regeneration of historical fabrics.

ENDNOTE

1. OVAKO Working Posture Analysis System

REFERENCES

- Apostolou, Malvina A. 2018. Urban eco-acupuncture methods: case study in the city of Athens. *2nd International Conference on Changing Cities II: Spatial, Design, Landscape & Socio-economic Dimensions*, Jun 2015, Porto Heli, Greece, 932-940. <https://shs.hal.science/halshs-01798506v1/document>
- Casagrande, Marco. 2015. From Urban Acupuncture to The Third Generation City. In *La ville rebelle. Démocratiser le projet urbain*, edited by Jana Revedin, 1-22. Gallimard. https://www.researchgate.net/publication/293645323_From_Urban_Acupuncture_to_the_Third_Generation_City
- Chen, Lingrong. 2015. Urban Acupuncture of Old Residence a Study on Informal Renewal Project of Lilong House. *Creative Urban Renewal* 15-27.
- Chan, Joyce. 2017. Urban Acupuncture in Taipei. Master in Environmental Studies, York University of Toronto. <https://yorkspace.library.yorku.ca/xmlui/bitstream/handle/1031534714/MESMP02766.pdf?sequence=2&isAllowed=y>
- Danaeefard, Hasan, and Hussein Kazemi. 2017. *Qualitative inquiry and research design: choosing among five approaches (narration study, phenomenology, grounded theory, ethnography, case study)*. John Creswell. Tehran: Saffar. [in Persian]
- Delawar, Ali. 2006. *Theoretical and scientific foundations of research in humanities and social sciences*. Tehran: Roshd. [in Persian]
- Fajr-e-Tosea Consultant Engineers. 2010. Renewal and Regeneration Plan for the worn fabric of Sanandaj City. [in Persian]
- Hoogduyn, Rick. 2014. Urban Acupuncture Revitalizing urban areas by small scale interventions. Master Thesis, Blekinge Tekniska Högskola. <https://www.semanticscholar.org/paper/Urban-Acupuncture-%22Revitalizing-urban-areas-by-Hoogduyn/df206172aad244ea05a3939de4608dd4e241ce21>
- Houghton, Kirralie, Jaz Hee-Jeong Choi, and Artur Lugmayr. 2015. From the Guest Editors: Urban Acupuncture. *Journal of Urban Technology* 22(3): 1-2. <https://www.tandfonline.com/doi/abs/10.108010630732.2015.1087684/?journalCode=cjut20>
- Karamipour, Arefeh. 2009. Review experiences of regenerating historical and ancient centers of the city. *Online Regeneration Journal* (6): 1-8. <http://markazmemari.com/uploads/Tajarob-Baz-Zende-Sazi-Marakez.pdf> [in Persian]
- Kavousi, Esmail, and Mah Monir Bayanati. 2014. An introduction to qualitative research. *Proceedings of qualitative research methods in social studies, Research Center of Applied Studies*. 127-165. <https://bayanbox.ir/view/4413867067008684188/KAMIKEIFI.pdf> [in Persian]
- Lastra, Alejandro, and Dorina Pojani. 2018. Urban acupuncture to alleviate stress in informal settlements in Mexico. *Journal of Urban Design* 23(5): 749-762. <https://doi.org/10.108013574809.2018.1429902/>
- Mahdianpoor, Javad, Mohammad Taghavi Zavareh, and Hamidreza Saremi. 2018. Improving the Quality of Residential Neighborhoods using Urban Acupuncture Approach in Tajrish Neighborhood. *Urban Studies* (31): 31-44. https://urbstudies.uok.ac.ir/article_61137.html [in Persian]
- Marzi, Maurizio, and Nicoletta Ancona. 2004. Urban acupuncture, a proposal for the renewal of Milan's urban ring road. *40th ISoCaRP*. Geneva, Switzerland. <https://www.semanticscholar.org/paper/Urban-acupuncture%2C-a-proposal-for-the-renewal-of-Marzi/c74d725a92046c15bd5dba091f97da33ea6c9dd2>
- Minhao, Zhang, Lou Lubei, Fu Junyi, and Pan Jiameng. 2014. City Acupuncture: The Sustainable Development of The Balanced City In Post-Industrial Age. A: Seminario Internacional de Investigación en Urbanismo. "VI Seminario Internacional de Investigación en Urbanismo, Barcelona-Bogotá, junio 2014". Barcelona: DUOT, 2014. <https://doi.org/10.5821/siiu.6006>
- Nasl Seraji, Jebraeil, and HamidReza Kachorian. 1999. Ergonomics evaluation of work posture in OWAS method in Ballast mines. *Journal of Tehran Medical University* (3): 52-58. https://tumj.tums.ac.ir/browse.php?a_id=1459 [in Persian]
- Pascaris, Jonathan. 2012. Healing Neighbourhoods through Urban Acupuncture. Master of Architecture, Ryerson University. https://rshare.library.torontomu.ca/articles/thesis/Healing_Neighbourhoods_through_Urban_Acupuncture/14651664
- Pourahmad, Ahmad., and Ramezan Akbarnejad Bayi. 2011. Pyramid reinvented historical texture urban using swot model (case examples, Babol historical texture). *GEOGRAPHICAL JOURNAL OF CHASHMANDAZ-E-ZA-GROS* (9): 81-107. <https://www.sid.ir/paper/175724/fa> [in Persian]
- Prifti, Jonila. 2012. Urban Acupuncture As A Strategy For Public Spaces Renewal In Tirana. *Tirana Architecture Week*, 266-277.
- Safdari, Sima, Mohammadreza Pourjafar, and Ehsan Ranjbar. 2014. Regeneration of base culture leading to improvement of cultural interactions (case study: the historical fabric of Mashhad). *Haft-Shahr Journal* (47-48): 25-39. http://www.haftshahrjournal.ir/article_14668.html [in Persian]

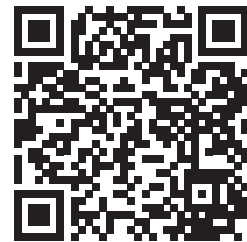
- Santos, Niedja. 2018. Urban Acupuncture Through Creative Villas in Santos City, Brazil. *VI International Creative Cities Congress*, 939-964. https://www.ciudades-creativas.com/proceedings/6ccc/proceedings-6ccc_049.pdf
- Shahr-e-Danesh Tadbir Consultant Engineers. 2006. Development and Construction Plan (Master Plan) of Sanandaj City. [in Persian]
- Shen, Luni. 2015. Urban Acupuncture of Traditional Community A Study of Beijing "Hutong" Bubble and Shanghai "Tianzifang". *Creative Urban Renewal*: 56-65.
- Shidan, Cheng, and Niu Xile. 2010. "Urban Acupuncture" Based on Digital Technology. In: *The 2nd International Conference on Information Science and Engineering*. <https://ieeexplore.ieee.org/document/5691876>
- Silva Mora, Natalia. 2013. Urban Acupuncture Projects as a Slum Upgrading Process How to tackle poverty effectively in a multidimensional way: The case of Ciudad Bolívar in Bogotá. Master Thesis Urban Development Planning, Banco de la republica Colombia. <https://babel.banrepcultural.org/digital/api/collection/pl17054coll23/id/34/download>
- Sun, Yuman. 2015. Urban Acupuncture on Street Level: Narrative Shanghai and Hutong Parklet. *Creative Urban Renewal*: 28-40.
- Tang, Yiming. 2015. Introduction to Urban Acupuncture: Theory and Practices. *Creative Urban Renewal*: 4-14. https://www.academia.edu/22298104/Urban_Acupuncture_and_its_Practices_in_China_and_Egypt
- Yimeng, Zhang. 2015. Rethinking the Dimension In Urban Acupuncture "Super scale" strategy in practice. Master Thesis, University Politècnica de Catalunya. https://upcommons.upc.edu/bitstream/handle/2117103124/ZhangYimeng_TFM.pdf

HOW TO CITE THIS ARTICLE

Raoufi, Rojin, and Abbas Shieh. 2023. Formulating Regeneration Strategies for the Historical Fabric of Sanandaj City by Applying an Urban Acupuncture Approach. *Armanshahr Architecture & Urban Development Journal* 15(41): 247-263.

DOI: 10.22034/AAUD.2023.270749.2412

URL: http://www.armanshahrjournal.com/article_168914.html



COPYRIGHTS

Copyright for this article is retained by the author(s), with publication rights granted to the Armanshahr Architecture & Urban Development Journal. This is an open- access article distributed under the terms and conditions of the Creative Commons Attribution License.

<http://creativecommons.org/licenses/by/4.0/>



