Research Paper: Investigation of the Healthy Village Indicators through Sustainable Rural Development Approach (Case Study: Kermanshah Province, Iran)

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ABSTRACT

Purpose: The health issue has become prominent due to population growth in the 20th century. Good health necessitates a healthy environment and appropriate social, economic, cultural, and environmental foundations. On one hand, understanding the nature and dimensions of health, as well as its influencing factors, and on the other hand, fostering its development within rural regions is crucial in promoting health in rural areas and fostering stability within these regions.

Methods: Therefore, this study was conducted as an applied research approach with a descriptive-analytical type. It investigates the indicators of a healthy village across various dimensions (medical-health, social, economic, environmental, etc.) and explores their relationship with sustainable rural development. The statistical population comprises 310 households residing in three healthy villages of Kermanshah province (HoriAbad et al.), totaling 969 individuals. A systematic random sampling method was employed for data collection.

Results: The findings demonstrated that the indicators of Healthy Village are favorable, with a promising position in the environmental sector, averaging 4.90. Moreover, a significant correlation was found between different economic and ecological dimensions and indicators of a healthy village and sustainable rural development, with a confidence level of 95%. Furthermore, the villages investigated in this study were categorized into three groups. Nosmeh village exhibited the most favorable situation concerning the indicators of a healthy village, followed by HoriAbad and Pataq.

Conclusion: Additionally, Nosmeh village, which displayed the most satisfactory health status, also ranked highest in sustainable rural development. HoriAbad and Pataq villages ranked next regarding sustainable rural development and health.

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1. Introduction

Governments, alongside their responsibilities towards their respective societies, are committed to promoting and upholding principles such as equality, human dignity, and honor on a global scale (United Nations, Millennium Declaration: 2010). Summits meetings have urged nations to take significant measures to reduce poverty and foster equality (Michel et al., 2017: 500). These measures include eradicating extreme poverty and hunger, ensuring universal primary education, advancing gender equality, empowering women, reducing child mortality, improving maternal health, combating diseases like AIDS and malaria, and so on, ensuring environmental sustainability, and establishing a global partnership for development (Suri et al., 2016: 45). In line with these international commitments, a project was initiated in 2005 to promote rapid growth in villages in the southwest of the African Sahara. The initial project's strengths and weaknesses were identified; a 10-year project was designed with long-term strategies and increased funding to achieve development goals. By 2006, this plan had been expanded to encompass ten countries (Mitchell et al., 2017: 500). The success of the concept of the healthy village served as a foundation for its implementation in other nations. Maintaining health is a crucial objective of rural development, as it serves as the cornerstone for societal continuity and creating a healthy life. Improving material and spiritual living conditions can enhance communities' overall health (Babaei Fini et al., 2014: 127).

Today, health is recognized as one of the fundamental components and crucial social assets. Accordingly, four development goals directly relate to health, while the other four targets indirectly relate to it (Abbasi & Dehghani, 2016: 168). A brief examination of the rural areas in the country over the past few decades reveals that numerous challenges, such as poverty, inequality, and significant population decline, have plagued most rural settlements (Riahi & Nouri, 2013: 114). These gaps within generations, along with regional and territory inequalities, have adversely affected rural areas and hindered sustainable rural development. Consequently, it underscores the necessity and prioritization of sustainability in the planning of rural development (Tavakkoli, 2012: 72). Moreover, rural areas in the country are struggling with various issues such as unemployment, heavy reliance on the agricultural sector, low income, and a lack of non-agricultural employment opportunities. This economic instability has led to rural areas experiencing migration and depopulation. Other contributing factors include the structural vulnerabilities of villages, low wage levels, and unfavorable working conditions, such as inadequate social security benefits and pensions (Qadiri Masoom et al., 2009: 2). In essence, it is this instability that has prompted a significant focus on achieving stability (Schumacher, 1986: 144, cited by Qadiri Masoom et al., 2009: 2). The World Health Organization introduced the concept of a healthy village in 1989 (Anabastani & Behzadi, 2012: 2). The implementation of healthy villages commenced in Kermanshah province in 2014, with the first healthy village established in Pataq village, Sarpol Zahab city. This initiative, carried out by the environmental health engineering group in collaboration with public participation and inter-sectoral involvement of organizations, marked the beginning of healthy villages in Kermanshah province. Subsequently, HoriAbad village in Ravansar City became the second healthy village in 2016, followed by Nosmeh village in Paveh City, which joined the group of healthy villages in 2017. Given the success of the program in the province and the demand from residents in other villages, the Healthy Village Plan has been proposed for implementation in 42 villages. This plan is anticipated to be implemented in numerous villages in the coming years. However, due to the novelty of this plan, limited research has been conducted on it in Kermanshah province. Therefore, this study addresses this question: What are the indicators of healthy villages in the context of sustainable rural development in Pataq, Nosmeh, and HoriAbad, the healthy villages of Kermanshah province?

2. Literature Review

A healthy village encompasses a physical and social environment that promotes health. Rural areas' health relies on suitable platforms for a healthy environment and social, economic, cultural, environmental, aesthetic, educational, psychological, health, and sports aspects. The foundation and principal capital of these settlements are its residents (Sheikhi et al., 2012: 120).

Maintaining health is one of the primary goals of rural development, as it forms the basis for societal continuity and the establishment of a healthy lifestyle. Enhancing material and spiritual living conditions can improve health status (Babaei Fini et al., 2014: 127). The World Health Organization defines health as a state of complete physical, psychological, and social well-being, encompassing the absence of disease and the attainment of the highest possible standard of health without cultural, political, economic, and social discrimination (Afrakhte & Afkar, 2013: 6). Presently, health is regarded as one

of the fundamental components and vital social assets, with four development goals directly linked to it and another four indirectly related to it (Abbasi & Dehghani, 2016: 168). The first four goals directly associated with health and public health involve eradicating extreme poverty and hunger, reducing child mortality, improving maternal health, and combatting diseases such as AIDS, malaria, and so on (Abbasi & Dehghani, 2016: 168). The remaining four goals have indirect connections to health. Health plays an undeniable role in promoting human development indicators. The human-centered approach to development recognizes that a healthy individual contributes to a healthy society. Clearly, health and development are closely intertwined. Development, fundamentally, is a response to human needs, and while providing resources for support, it can also pose health threats. The critical determinant of effectively managing contemporary threats arising from developmental programs and ensuring the sustainability of development programs lies in the highest importance to human health across diverse domains encompassing the economic, social, and environmental aspects (Anabastani & Behzadi, 2012: 2).

Sadeghlou et al. (2014) assessed and prioritized rural areas based on the indicators of a Healthy village in Qaravan village of Minodasht City, Iran. After implementing the Electra model using the indicators of a healthy village, Pasang Bala and Sadegh HoriAbad villages exhibited the highest level of health among the sampled villages. In contrast, Vogogol Bozorg and Manjav villages had the lowest level of health. Anabestani and Dehghani (2016) examined the approach of the Millennium Development Declaration toward health and public health. They emphasized that the Millennium Development Declaration places significant emphasis on health and hygiene. Therefore, countries should give greater attention to the provisions of this declaration as fundamental components of human rights and international law. Governments also should establish appropriate policies and planning to ensure the criminal protection of these rights. Suri et al. (2016) evaluated the indicators of achieving the Millennium Development Goals in Iran, the world, and the Eastern Mediterranean region based on data from the Global Health Statistics Report 2014. Their findings indicated a substantial improvement in health levels, particularly in rural areas. Sadeghlou et al. (2014) evaluated and prioritized rural areas based on healthy village indicators, focusing on the case study of Gravlan village in Minodasht. They concluded that providing rural healthcare is a crucial aspect of integrated development projects aligned with rural development and sustainable rural development goals. Achieving a wellness and healthy life depends on various factors, including proper nutrition, consistent physical activity, and a constructive mindset. The imperative task facing all nations is cultivating healthy rural communities and striving to bridge the health gap between rural and urban populations. A key element in achieving positive outcomes lies in focusing on energy and formulating policies to improve rural populations' health status to build healthy indigenous communities. Yeung and Selp (2016) investigated the Healthy Islands Concept (HIC) in Papua, New Guinea, a collaborative community-based program. They highlighted the importance of unique planning and monitoring approaches in the Pacific Islands. After over a year of implementation, significant positive results were observed, including communities successfully inducing health behavior change and adapting lifestyles to achieve better health outcomes. Promising advancements have been observed in prioritizing health and addressing a broader spectrum of health-related concerns within targeted communities. Kumpusalo et al. (1996) conducted the Finnish Healthy Village Study, a low-cost local health promotion program. Their research demonstrated that the collaboration of local managers has contributed to improving community health and well-being.

The subsequent section considers several theories about Healthy Village;

A: Smart growth theory: This concept emphasizes environmentally sensitive development and aims to reduce reliance on vehicle transportation, decrease air pollution, and make infrastructure investments more efficient. It promotes planned development that supports open spaces and agricultural fields, revitalizes communities, and provides multiple transportation options. It emphasizes higher density and mixed-use development with good access and easy transportation. This theory adopts an approach that does not aim to restrict growth but instead strives to address the issue in a manner that considers environmental, economic, and social considerations. In other words, it aims to raise awareness about how development can enhance the quality of life (Ziari & Janbabanezhad; 2016: 19). This theory incorporates the environmental dimension as one of the components contributing to a Healthy village. While it considers the other aspects, it underscores the paramount significance of a Healthy environment in attaining a Healthy society, surpassing the importance of the remaining dimensions.

B: The theory of human ecology: This concept highlights the interactions and interdependent relationships between humans and their physical, ecological, and so-

cial environments, which includes the change and adjustment of resources, materials, energy, and information. According to this theoretical framework, the life quality of human beings and the environment are inseparable. Human well-being is linked to improving their conditions and satisfaction across all dimensions of life. Objective indicators, such as economic, physical, and social dimensions of public welfare, are considered alongside subjective indicators emphasizing human needs and life satisfaction (Jomepoor & Eidi Tarakame, 2013: 119). According to this theory, just enhancements in the physical and material aspects, or the living conditions of individuals, are insufficient in achieving holistic well-being within a healthy rural community. Instead, the rural community aims to actively attempt sustainable development by diligently fostering advancements and enhancements that contribute to its inhabitants' overall quality of life.

C: Michael Tdaro's migration theory (1975): The term "migration" was first introduced by an English scholar named Graham in 1892, and subsequently, in 1903, it gained further recognition as the title of a French publication. Since then, the term has gained widespread acceptance. The rural migration was initially viewed positively, which was accepted. Based on the views expressed, migration was initially helpful for the employment non-useful rural labor in urban industries. However, as crises emerged in both rural and urban areas, the benefits of migration diminished. Today, with industries demanding skilled and specialized labor, the surplus labor force, including the service sector, cannot be hired by cities. This situation creates a crisis, particularly in developing countries. Excessive migration, beyond job opportunities, is seen as a sign of underdevelopment in these countries (Papoli & Ebrahimi, 2012: 152-153). Slow and low-level migration is desirable in a healthy village, with rural youth finding employment within or near their village. This requires the creation of infrastructure and support from government agencies and non-governmental organizations, particularly concerning agriculture. One of the primary causes contributing to the unfavorable financial and livelihood conditions of farmers is the presence of intermediaries and the subsequent sale of products at significantly reduced prices. Developing transformational industries can provide employment opportunities for young people and improve farmers' financial and livelihood conditions, reducing the need for migration.

D) Bioregion Theory: A bioregion is formed by the combination of the Greek terms "Bio," meaning life, and "Regio," meaning territory, signifying a territory essential for sustaining life. It represents a discernible geographical unit characterized by interconnections and self-sustaining life systems. Consequently, intricate relationships are similar to organs among all inhabitants within the region. This theory criticizes development that prioritizes economic growth without considering the well-being of people. It argues that such development often benefits the dominant culture of Western consumerism, relies on monetary relationships, and overlooks social and ecological costs, ultimately leading to environmental destruction. In contrast, the theory advocates for a development approach that minimizes and controls the consumption of renewable resources, produces pollutants in proportion to their absorption, and meets basic human and social needs (Papoli & Ebrahimi, 2012: 267-269). According to the bioregion theory, a healthy village is not solely defined by its economic status. However, it is characterized by high social welfare, a healthy natural environment free from damage and destruction, and conditions promoting young people's growth and development. In the agricultural sector, there is an emphasis on reducing the use of chemical fertilizers and promoting organic farming practices.

3. Methodology

The research conducted in the context of Healthy Village in Kermanshah province involved a statistical population of 310 households across three villages (HoriAbad, Nosmeh, and Pataq), with a total population of 969 people. The sampling method employed was stratified random sampling with proportional allocation. The nature of the research is applied, the scope is a case study, and the method is described as descriptive-analytical research (Table 1).

According to Table 1, the research indicators are as follows

The picturesque village of HoriAbad, established around 120 years ago, is situated approximately 7 km away from the center of Javanrud city (25° 40' Longitude, 41 ° 19' Latitude). According to country divisions, this village belongs to Ghori Qala village and the Shahu section of Ravansar city; HoriAbad is bounded by the village of Shabankare to the north, the city of Javanroud to the south, the village of Bileh Swar to the east, and the village of Bezgore to the west. On the other hand, the village of Pataq is situated in the eastern region of Sarpol Zahab city, within the Beshiweh and Pataq districts (34° Longitude, 45° Latitude) (Riahi et al., 2013: 108). The first map illustrates the precise locations of these cities within Kermanshah province.

4. Findings

Our findings revealed that the highest frequency with a high score is attributed to the absence of child mortality under the age of five and the absence of communicable diseases, accounting for 64.6% of the respondents. Following this, the presence of newly constructed houses in the village is noteworthy, as 55.6% of the participants reported. Conversely, the lowest score is attributed to the age at which first pregnancies occur, indicating a trend of early pregnancies within the village, with a score of 27.9%. These findings underscore the paramount importance of health status as a fundamental dimension of human development. Accordingly, it becomes evident that health status constitutes a pivotal dimension of human development. Moreover, it is noteworthy that a distinguishing feature of many third-world countries is the alarmingly high mortality rate among children under five. In the context of the examined villages, a notable improvement has been achieved, with a decrease in child mortality rates and a corresponding enhancement in the overall health conditions. This positive development highlights the tangible progress achieved in healthy villages towards fostering sustainable rural development (Table 4).

Table 1. Research sample

Village	Household number	Population	Sample number
HoriHoriAbad	40	122	49
Nosmeh	186	626	252
Pataq	84	221	89
Total	310	969	390

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Table 2. Indicators of a Healthy Village

Components	Variables
Health medicine	1- Age of the first pregnancy of the household head wife; 2- The number of child mortality under the age of five; 3- The number of disabled people in the household; 4 The number of smoking addicts in the household; 5- The number of drug addicts in the household; 6- The number of sick people who need social services in the household; 7- Using family planning methods; 8- Presence of a doctor in the village; 9- Suffering from infectious diseases; 10- Health entertainment and leisure time; 11- The presence of newly built houses with good quality in the village
Social	1-The number of people in each room (individual density in the room); 2- Divorce rate in the family; 3- The family leisure time; 4- The satisfaction level with the insurance benefits of villagers and health and medical services; 5- The satisfaction level with educational services (primary, middle school, high school); 6- The job satisfaction; 7- The satisfaction level with transportation; 8 The satisfaction level of fuel; 9 The satisfaction level of sports facilities; 10-Lack of danger when commuting overnight; 11- Accessibility to the police station in emergencies
Economic	1-Possessing a vacuum cleaner - washing machine - refrigerator, freezer...; 2- Variety of job opportunities in the village; 3- Having retirement facilities; 4 - Satisfaction with income; 5- Family income and wealth; 6- Savings level in rural households; 7- Job security level (official or contractual); 8- Having proper nutrition; 9- Possession of housing ownership; 10- Possession of personal car; 11- The ratio of non-food expenses to total income; 12- Possession of a computer; 13- Housing quality status according to the type of materials
Environmental	1- Possesing a sanitary toilet; 2- Possesing a sanitary and separate kitchen; 3- Having a sanitary bathroom; 4-Having a sanitary stall; 5- The amount of use of fossil fuels instead of solid fuel; 6- Sanitary disposal of sewage; 7- Using sanitary methods for waste disposal; 8- The presence of vermin in the residence; 9. The satisfaction with the villagers in terms of disturbing and stray animals; 10 Satisfaction level of surface water disposal (drainage); 11 - The level of satisfaction with bakery hygiene; 12- The satisfaction with butcher hygiene; 13- The satisfaction with grocery store hygiene; 14- Level of satisfaction with street lighting; 15- The satisfaction with the quality of domestic water; 16. Satisfaction with the quality of agricultural water

Reference: Sadeghlou et al. (2014), Suri et al. (2016), Yeung & Selp (2016), Kumpusalo et al. (1996), Sheikhi et al. (2012), Babaei Fini et al. (2014), Ziari & Janbaba Nejad (2016), Anabestani & Behzadi (2012)

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Table 3. Indicators of sustainable development

Components	Variables
Sociocultural	The accessibility level of the clinic or health center in the village, the satisfaction of the community members regarding their mental and emotional well-being, the availability and utilization of Internet services, the provision of services by social security insurance or medical services, the satisfaction of the community members with their physical health, the adoption of new developments in the agricultural sector, the involvement and utilization of young labor in agriculture, the collaboration between villagers and scientific centers (such as university researchers) to advance agriculture, the farmers' awareness of market conditions for crop cultivation and pricing, independent of intermediaries, and the recognition of youth as an influential force in the village
Economic	The unemployed individuals relative to the overall population, the availability of banking institutions or agencies dedicated to rural and nomadic affairs or similar activities aimed at facilitating agricultural equipment (such as providing loans), the satisfaction level regarding future employment prospects, the income equality across different socioeconomic strata within the village, the satisfaction level with personal income, the extent of government investment in infrastructure sectors, the number of loans and facilities by local establishments to farmers in the region, the existence of well-defined regulations governing the implementation of new changes, such as innovative irrigation methods in the agricultural sector, cultivation of crops suitable for profitable market placement by farmers, and appropriate timing of irrigation, specifically avoiding noontime and direct sunlight.
Environmental-institutional	Satisfaction level concerning the environmental health and preservation of the village's natural landscape, the presence of a comprehensive sewage disposal system and an efficient waste management system, the availability of integrated and mechanized lands within the village, the proportion of irrigated fields with the total arable lands, satisfaction with the adequacy of communication infrastructure, the presence of well-maintained asphalt roads in the village, accessibility to electricity for irrigation purposes through the use of electro-pumping techniques, the availability of educational facilities, and the implementation of water-saving measures through proper plumbing of agricultural wells to conserve water resources within the agricultural sector, farmers awareness of the water shortage adverse effects and adopting correct measures to use water in the agricultural sector

Reference: Afarakhte & Afkar (2013), Tawakli (2012), Riyahi & Nouri (2013), Suri et al. (2016), Qadiri Masoom et al. (2016), Abbasi & Dehghani (2015), Shen, Yeung & Selep (2016)

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Table 4. Frequency, mean, and standard deviation of the medical-sanitary index

Item	Very High	High	Medium	Low	Very Low	Mean	Standard Deviation	Attitude
The first pregnancy age of the head of the household's wife	27.9	7.4	48.2	6.2	10.3	2.63	1.23	Medium+
Number of dead children under five years of age in the household	0.0	0.0	1.3	34.1	64.6	1.36	0.508	Very low
Number of disabled individuals in the household	0.0	0.0	9.5	26.4	64.1	37.3	0.874	Very low
Number of smoking addicts in the household	2.6	0.5	8.20	26.4	49.7	2.64	1.49	Very low
Number of drug addicts in the household	0.0	0.0	9.5	26.4	64.1	1.45	0.662	Very low
Number of sicks who need social services in the household	0.03	6.9	22.1	43.6	27.2	2.09	0.886	low
Use of family planning methods	0	7.2	46.7	16.9	29.2	2.3	0.973	Medium
The presence of a doctor in the village	3.1	41.3	50.3	5.4	0.0	3.42	0.643	Medium
Infectious diseases	0.0	0.0	1.3	34.1	64.6	1.36	0.508	Very low
Health and leisure activities	0.0	37.7	45.4	6.7	10.3	3.10	0.919	+Medium
Newly- built and high-quality houses in the village	7.37	55.6	6.7	0.0	0.0	4.31	0.590	Very high

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Based on the findings presented in Table 5, the frequency analysis focused on sub-social and cultural indicators. The highest frequency is observed in the absence of divorce, with a score of 62.1%. Additionally, the item measuring satisfaction with the benefits of rural insurance and health services received a significant frequency, with 53.0% of respondents expressing satisfaction. This suggests villagers' recent health insurance coverage implementation has improved insurance services. Conversely, the lowest score is associated with satisfaction regarding transportation, with only 3.3% of respondents.

According to Table 6, the item demonstrating the highest level of satisfaction is income, scoring at 53.6%. Fol-

lowing closely are the economic indicators of household income and wealth, which obtained a score of 2.6%. Conversely, job opportunities exhibit the lowest score at 62.1%. In other words, in the economy section, it is worth noting that the issues of unemployment and low income have led to poverty in rural areas. However, the villages above seem to have overcome this problem, leading to an improvement in the economic conditions of the residents. Nonetheless, the matter of employment diversity remains unresolved within these rural areas, necessitating the exploration of potential solutions in this domain.

In this section, the sanitary waste disposal item acquires the highest score of 55.4% (Table 7). Conversely, the lowest score in this section is associated with using fossil fuels instead of solid fuels (22.8). Notably, environmental degradation is one of the challenges encountered in rural development after modernization and heightened economic growth. However, significant progress has been made in adequately disposing of waste and wastewater in the selected villages recognized as "healthy villages" in line with sustainable development principles. This has contributed to the formation of high-quality rural communities. However, other items exhibited superior averages.

This section presents sustainability indicators across various dimensions. Based on Table 8, in the social and cultural dimension, the highest score is attributed to the attention and utilization of young labor in the agricultural sector (69.8%). Conversely, the item with the lowest score in this dimension pertains to adopting new agricultural methods, registering a score of 13.4%.

Shifting the focus to the economic dimension, the highest score is associated with satisfaction regarding job prospects, reaching 85.9%. Subsequently, the item with the next highest score involves the presence of banks, rural and nomadic affairs offices, or similar institutions offering agricultural facilities such as loans, which obtained a score of 84.6%. Additionally, it is noteworthy that the item about equality exhibits the lowest score within the economic sector. Conversely, in the environmental sector, the highest score is attributed to the presence of integrated and mechanized lands in the village, achieving a remarkable score of 91.5%. However, it is essential to highlight that the lowest score in this section is associated with piping agricultural wells to mitigate water wastage in the agricultural sector and ensure convenient access to educational centers (31.8%).

Table 5. Frequency, mean, and standard deviation of the socio-cultural index

Item	Very High	High	Medium	Low	Very Low	Mean	Standard Deviation	Attitude
Number of people in each room (density of people in the room)	0.8	10.8	61.3	12.6	14.6	2.70	0.873	Medium
Divorce rate in the family	0.0	0.0	108	27.2	62.1	1.48	0.682	Very low
The family's leisure time	0.0	31.8	33.1	26.2	9.0	2.87	0.962	Moderate to high
Satisfaction level with the insurance benefits of villagers and healthcare services	0.0	53.6	36.2	9.2	1.0	3.42	0.701	High
Satisfaction level with educational services (primary, middle school, high school)	0.0	52.8	40.5	5.9	8.0	3.45	0.642	High
Job satisfaction	5.1	0.0	9.0	35.6	50.3	1.74	0.99	Very low
Satisfaction with transportation	0.0	3.3	65.1	20.0	11.5	2.60	0.733	medium
Fuel satisfaction	0.0	34.1	62.3	3.6	0	3.30	0.533	medium
Satisfaction with sports facilities	0	17.2	77.9	4.6	0.3	3.12	0.46	medium
Security during night commuting	0.0	12.8	60.0	26.2	1.0	2.84	0.63	medium
Access to the police station in an emergency	0.0	31.8	64.6	1.8	1.8	3.26	0.58207	medium

Table 6. Frequency, mean, and standard deviation of economic index

Item	Very High	High	Medium	Low	Very Low	Mean	Standard Deviation	Attitude
Possesses a vacuum cleaner, washing machine, refrigerator, freezer...	0.8	10.8	61.3	12.6	14.6	3.09	0.648	Medium
Job opportunities diversity in the village	0.0	0.0	10.8	27.2	62.1	3.31	0.541	Very low
Having retirement facilities	0.0	31.8	33.1	26.2	9.0	1.85	0.848	Moderate to high
Income satisfaction	0.0	53.6	36.2	9.2	1.0	1.74	0.994	High
Family income and wealth	0.0	52.8	40.5	5.9	0.8	3.31	0.541	High
Savings level in rural households	5.1	0.0	9.0	35.6	50.3	1.74	0.994	Very low
Job security level (official or contractual)	0.0	3.3	65.1	20.0	11.5	1.81	1.04	Medium
Proper nutrition	0.0	34.1	62.3	3.6	0.0	3.64	0.861	Medium
Possession of housing ownership	0.0	17.2	77.9	4.6	0.3	4.35	0.575	Medium
Possession of a personal car	0.0	12.8	60.0	26.2	1.0	3.17	0.708	Medium
The ratio of non-food expenses to total income	0.0	21.2	71.8	2.1	4.9	3.19	0.567	Medium
Having a computer	0.0	34.6	63.1	1.5	0.8	2.17	0.784	Medium
Housing quality status in proportion to materials type of	2.6	2.1	8.2	52.8	34.4	4.09	0.742	High

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Table 7. Frequency, mean, and standard deviation of environmental index

Item	Very High	High	Medium	Low	Very Low	Mean	Standard Deviation	Attitude
Having a sanitary toilet	50.3	0.0	9.0	35.6	5.1	4.32	0.612	High
Having a sanitary and separate kitchen	0.0	34.6	63.1	1.5	0.8	4.34	0.595	High
Having a bathroom	5.1	50.3	9.0	35.6	0.0	4.36	0.578	High
Having a sanitary stall	47.9	1.8	10.8	34.4	5.1	4.16	0.700	High
The use of fossil fuels instead of solid fuel	22.8	22.1	52.3	2.3	0.0	1.79	1.01	Low
Sanitary disposal of sewage	4.0	55.4	4.4	0.3	0.0	4.23	0.634	High
Using sanitary methods for waste disposal	0.0	30.8	61.3	3.1	4.9	3.76	0.962	High
Vermin in the residence area	0.0	27.7	64.1	8.2	0.0	2.54	2.38	Medium
The satisfaction level of the villagers in terms of nuisance and stray animals	23.6	35.6	40	0.0	0.0	4.32	0.612	High
Satisfaction level with disposal of surface water (drainage)	32.3	44.9	22.6	0.3	0.0	4.37	0.576	High
The satisfaction level with bakery hygiene	40.3	52.6	6.9	0.3	0.0	4.33	0.556	High
The satisfaction level with butcher hygiene	40.5	53.6	5.6	0.3	0.0	4.33	0.556	High
The satisfaction level with grocery store hygiene	41.3	54.1	4.4	0.3	0.0	4.33	0.546	High
The satisfaction level with street lighting	34.4	48.2	17.4	0.0	0.0	4.18	0.727	High
The satisfaction level with the quality of drinking water	35.4	50.4	13.8	0.3	0.0	4.21	0.677	High

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Table 8. Frequency percentage, mean, and standard deviation of dimensions of sustainable rural development

Aspect	Item	Very High	High	Medium	Low	Very Low	Mean	Standard Deviation	Attitude
Socio-cultural	Accessibility to the clinic or health center in the village	30	57.9	11.8	0.3	0.0	3.84	0.630	High
	The mental health of society	11.3	82.1	6.4	0.3	0.0	4.17	0.630	High
	Accessing the Internet and using it	34.4	42.8	22.8	0.0	0.0	4.04	0.430	High
	Social Security insurance services or medical services	34.1	48.2	17.4	0.3	0.0	4.11	0.748	High
	Physical health of society	34.6	47.7	17.7	0.0	0.0	4.16	0.707	High
	New methods application in the agricultural sector	14.4	13.8	72.1	0.0	0.0	4.16	0.704	High
	Paying attention and using youth in the agricultural sector	27.7	69.8	2.8	0.0	0.0	3.42	0.729	Medium
	Cooperation of villagers and councils with scientific centers (such as cooperation with university researchers) to advance research	27.7	22.6	49.5	03	0.0	4.24	0.493	High
	Farmers' awareness of the market situation for crop cultivation and its price without the need for middlemen	57.4	22.6	19.5	03	0.03	3.77	0.856	High
	Attention to the youth as an active force in the village	26.9	63.8	9.2	0.0	0.0	4.36	0.818	High
Economic	Unemployed people compared to the total population	15.4	77.9	6.7	0.0	0.0	4.17	0.575	High
	Banks or offices of rural and nomadic affairs or... to provide agricultural facilities (such as loans)	15.4	84.6	0.0	0.0	0.0	4.08	0.462	High
	Satisfaction level with the future job	13.8	85.9	0.0	0.3	0.0	4.15	0.361	High
	Income equality between different strata of the village	19.2	25.9	54.4	0.3	0.03	4.13	0.362	High
	Satisfaction with personal income	26.9	69	4.1	0.0	0.0	3.63	0.798	High
	Government investment in infrastructure sectors	26.9	69	3.6	0.3	0.3	4.22	0.508	High
	To the extent of providing loans and facilities to farmers in existing centers in the region	22.1	76.9	1.0	0.0	0.0	4.22	0.539	High
	Clear rules to create new changes, such as new methods of irrigation in the agriculture sector	2.8	67.4	22.8	0.3	6.7	4.21	0.432	High
	To what extent does the farmer cultivate products for the market?	23.1	55.4	21.5	0.0	0.0	3.59	0.839	High
	The extent of irrigation conducted at the appropriate timing, specifically during the midday period and away from direct sunlight	25.1	65.9	6.4	0.0	2.6	4.01	0.668	High
Environmental-institutional	Satisfaction level with the quality of environmental health and the natural landscape of the village	47.7	52.1	0.3	0.0	0.0	4.11	0.731	High
	village equipment with a sewage disposal system and a garbage collection system	29	70.5	0.3	0.0	0.0	4.47	0.505	High
	Integrated and mechanized lands in the village	6.4	91.5	2.1	0.0	0.0	4.28	0.472	High
	The ratio of irrigated land to total arable land	17.4	75.9	6.2	0.3	0.3	4.04	0.287	High
	Satisfaction with the appropriateness of communication roads	33.3	50	14.6	0.3	1.8	4.10	0.509	High
	Asphalt communication roads in the village	31.5	29.2	38.5	0.8	0.0	4.12	0.797	High
	Access of the village to suitable electricity for irrigation by electro pump method	19	70.3	10.5	0.3	0	3.91	0.851	High
	Access to educational centers	31.8	34.6	26.9	0	6.7	4.07	0.547	High
	Piping of agricultural wells to prevent water wastage in the agricultural sector	31.8	34.6	26.9	0	6.7	3.84	1.080	High
	Farmers' awareness of the dangers of water shortage and the correct use of water in the agricultural sector	36.4	34.4	35.4	2.1	1.8	3.81	0.910	High

According to Table 9, the results suggest a significant correlation between the health medicine index, the environment, and all facets encompassing sustainable development. Furthermore, the social index section outcomes demonstrate a statistically significant association between this particular index and the economic index. Additionally, a significant relationship between economic indicators and environmental indicators was observed. Notably, a substantial correlation was observed between the environmental index and all dimensions of sustainable rural development. Moreover, the dimensions of sustainable rural development exhibit a direct and meaningful interconnection. Consequently, based on the information above, it can be inferred that a meaningful relationship exists between the indicators of a healthy village and the indicators of sustainable rural development. Furthermore, the selected villages designated as healthy villages have successfully attained sustainable rural development.

The present study examined the correlation between the variables associated with a healthy village and sustainable rural development. According to Table 10, there was a noteworthy and statistically significant relationship between these variables. Accordingly, the investigated villages exhibit favorable indicators associated with a healthy village. Notably, the villages also demonstrate high scores in sustainable rural development indicators, indicating their successful attainment of sustainable rural development.

In this section, the questionnaires were distributed, and participants were asked to evaluate the status of medical, health, social, economic, and environmental indicators. According to Table 11, the environmental index emerged as the most significant indicator among the respondents (with an average value of 4.99 on a scale of 5). The economic index followed closely with an average score of 4.88, while the social and cultural index obtained an average score of 4.80, ranking third in importance. Although slightly lower in order, the medical and health index ranked last with an average score of 4.55.

Table 9. Measuring the correlation degree between the studied indicators

First variable	Second variable	Correlation coefficient of	Significance level
Health medicine	Social	0.013	0.733
	Economic	0.620	0.910
	Environmental	0.107	0.001
	Social Development	0.144	0.0
	Economic Development	0.158	0.0
	Environmental development	0.083	0.025
Social	Economic	0.239	0.0
	Environmental	0.057	0.123
	Social Development	0.013	0.730
	Economic Development	0.037	0.326
	Environmental development	0.052	0.152
Economical	Environmental	0.306	0.0
	Social Development	0.300	0.945
	Economic Development	0.050	0.183
	Environmental development	-0.410	0.268
Environmental	Social Development	0.072	.048
	Economic Development	0.136	0.0
	Environmental development	0.048	0.011
Social Development	Economic Development	0.302	0.0
	Environmental development	0.165	0.0
Economic Development	Environmental development	0.202	0.0

Table 10. Measuring the correlation degree between the indicators of a healthy village and sustainable rural development

First variable	Second variable	Correlation coefficient	Significance level
Healthy village variable	Sustainable rural development variable	0.188	0.0

JSRD

Table 11. Descriptive information regarding the importance of the indicators of a healthy village

Indicators	Frequency	Mean	Standard deviation	Standard deviation error	Confidence level of 0.95		Minimum	Maximum
					lower limit	Upper limit		
Medical-sanitary	390	4.55	0.28605	0.01448	4.5256	4.5826	3.82	4.80
Sociocultural	390	4.80	0.23212	0.01175	4.7792	4.8254	4.00	4.85
Economic	390	4.88	0.31822	0.01611	4.8545	4.9179	4.15	4.96
Environmental	390	4.99	0.48503	0.2456	4.9427	5.00	4.81	5.00

JSRD

An analysis of variance using Fisher's method was conducted to examine the differences in averages among the indicators of Healthy Village compared to the villages of Pataq, Nesmeh, and HoriAbad (Table 12). Therefore, it can be concluded that there is a significant difference between the indicators as $p \leq 0.05$.

The comparative comparison results of Table 13 showed a significant difference between all four dimensions of the healthy village, with an average of 4.99.

In this section, similar to the assessment of healthy village indicators, a questionnaire was distributed to the respondents to evaluate the status of indicators related to sustainable rural development. The participants were asked to provide their measurements for the social, economic, and environmental development indicators, and the results are presented in Table 14. Accordingly, the environmental development index was rated as the most important among the respondents, with an average score of 4.83 on a scale 5. The economic development index closely followed with an average score of 4.69, while the social development index obtained an average score of 4.43, ranking third in importance.

An analysis of variance using Fisher's method was performed to assess the differences in averages among the indicators of sustainable rural development across the villages of Pataq, Nesmeh, and HoriAbad. The results, as presented in Table 15, indicate a statistically significant difference among these indicators. This conclusion is supported by the observed significance level ($p \leq 0.05$). Hence, it can be concluded that there is a significant difference between the indicators of sustainable rural development in these villages.

The results of a comparative comparison of the averages calculated showed a significant difference between the three sustainable rural development indicators, with an average of 4.83 (Table 16).

According to the results, the environmental indicators and the environmental development index are in more favorable conditions compared to the other indices. Additionally, other indicators are aligned with the healthy village indicators. Specifically, the favorable environmental index in a healthy village context also demonstrates a more favorable position among the indicators of sustainable rural development than other indicators. Based on these findings, it can be concluded that a healthy village has made progress in achieving sustainable rural development.

Table 12. One-way variance analysis results regarding the differences between the indicators of Healthy Village

	Sum of squares	Freedom	Mean of squares	F value	Significance level
Between groups	475.549	3.00	158.516	1342.698	0.00
Intergroup	183.698	1556	0.118		
Total	659.247	1559			

JSRD

Table 13. Tukey's post hoc test to check the difference between indicators

Healthy village	Frequency	Confidence level of 95%			
		Group 1	Group 2	Group 3	Group 4
Health-medical	390	4.55			
Sociocultural	390		4.80		
Economic	390			4.88	
environmentalal	390				4.90

JSRD

Table 14. Descriptive information about the importance of sustainable rural development indicators

Indicators	Frequency	Mean	Standard deviation	Standard deviation error	Confidence level of 0.95		Minimum	Maximum
					Lower limit	Upper limit		
Social Development	390	4.34	0.188	0.0189	4.38	4.55	4.18	4.61
Economic Development	390	4.69	0.217	0.011	4.53	784	4.39	4.81
Environmental development	380	4.83	0.584	0.0396	4.69	4.98	4.26	4.95

JSRD

Table 15. One-way variance analysis test regarding the differences between sustainable rural development indicators

	Sum of squares	Freedom	Mean of squares	F value	Significance level
Between groups	377.718	3.00	128.15	1189.12	0.00
Intergroup	159.241	1289	0.154		
Total	598.514	1292			

JSRD

Table 16. Tukey's post hoc test to assess the difference between indicators

Rural sustainable development	Frequency	Confidence level of 95.0%		
		Group 1	Group 2	Group 3
Social development	390	4.43		
Economic development	390		4.69	
Envirenmetal development	390			4.83

JSRD

The subsequent Figure 1 illustrates the status of healthy village indicators and sustainability indicators based on the average values derived from the analysis of variance.

The analysis of Healthy Village and sustainable rural development indices clearly illustrates that Nosmeh Village exhibits a more favorable situation than the other two villages regarding the indicators associated with Healthy Village. On the other hand, HoriAbad and Pataq villages rank next. Similarly, the map representing sustainable rural development indicators also reflects a similar pattern, with Nosmeh village occupying the most favorable position and exhibiting the highest position concerning sustainable rural development indicators. Conversely, HoriAbad and Pataq villages exhibit similar levels of health in terms of sustainable rural development and are positioned next accordingly.

Nesmeh village, located near Paveh city, has the advantage of being closer to the city than the other two villages. Furthermore, it is in a mountainous region, while Pataq village is in the Sargol Zahab plain. The topographical

features of this mountainous region afford more favorable and superior meteorological conditions, thereby exerting a significant influence on the village's designation as a locus of enhanced healthfulness.

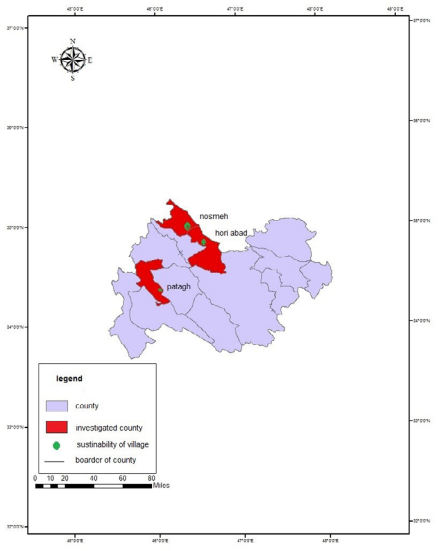

Figure 1. Status of Healthy Village Indicators

JSRD

5. Discussion

Overall, this research confirmed a significant difference between the dimensions of a healthy village at a 95% confidence level. The environmental dimension was the most important among the health-medical, economic, social, and environmental dimensions, with an average score of 4.90. Although there is a minor difference in average scores among the dimensions of a healthy village, all dimensions are crucial as they collectively contribute to the development of rural areas. Considering a holistic and comprehensive approach to achieving sustainable rural development is essential. However, given that the primary challenge faced by villages today revolves around the issue of environmental sustainability due to increased environmental degradation, it is undeniable that the development in the environmental dimension played a primary role in designating the studied villages as healthy villages.

Furthermore, considering the significant relationship between the healthy village indicators and those of sustainable rural development, it can be argued that both of these items aim for the same objectives. By collectively and comprehensively enhancing the social, economic, environmental, and health conditions of local rural communities, it can be asserted that sustainable rural development has been achieved.

As mentioned earlier, one of the foremost goals of rural development is to maintain health as the cornerstone for the continued vitality of the community and the promotion of a healthy lifestyle. Improving material and spiritual living conditions can enhance the health status within these communities. The World Health Organization (WHO) defines health as a complete physical well-being, encompassing psychological and social dimensions and ensuring the absence of disease while striving for the highest attainable health standards, free from cultural, political, economic, and social discrimination.

Rural development programs are integrated within the holistic approach of the healthy village model. The overarching objective of this model is to enhance the health status of villages residing in priority development areas, with a particular focus on vulnerable groups such as children, ethnic minorities, and women. The emphasis on developing a health-conducive rural environment and providing essential healthcare services holds extreme significance. Furthermore, empowering villages to assume responsibility for disease prevention measures becomes a crucial aspect of this approach.

This study examines the influence of a healthy village and its indicators on sustainable development across all three economic dimensions. In other words, the selected villages designated as healthy villages demonstrate a more stable condition, indicating a significant relationship between sustainability in the economic, social, and environmental dimensions and the indicators of a healthy village. Consequently, aiming toward a healthy village approach can contribute to greater sustainability in rural environments.

Similar to the research conducted by Abbasi & Dehghani (2016), this study explores the correlation between a healthy village and sustainable rural development. Anabestani et al. (2016) discuss the empowerment of rural communities towards attaining a healthy village concept. However, the current research adopts a comprehensive systemic view, investigating social, economic, environmental, and medical-health dimensions. A village can be classified as healthy if it demonstrates favorable conditions in all the dimensions above. Contrary to Anabestani et al. (2016), who prioritize the healthcare component in healthy villages, we found that healthy villages exhibit a more favorable position in the environmental sector, with an average of 90.4. Similar to the findings of Suri et al. (2016), the results of this study demonstrated an improvement and progress in the situation of villagers across the examined dimensions. Furthermore, Sheikhi

et al. (2012) have also concluded that the health status of villagers in healthy villages is favorable.

In contrast to the research conducted by Afrakhte & Afkar (2013), which explores the factors influencing villagers' health and highlights the unfavorable conditions in the studied villages, this study takes an opposing perspective. It focuses on investigating the indicators of a healthy village and their relationship with sustainable rural development.

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Conflict of Interest

The authors declared no conflicts of interest.

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