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Evaluation of Çankırı and Iğdır salt caves within the scope of health and recreation tourism

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Çankırı salt cave,
Iğdır salt cave.

ABSTRACT

With the increasing popularity of healing methods involving salt, the importance of salt mines has grown significantly over time. Today, as salt therapy (Speleotherapy) becomes more widespread, salt caves in many countries around the world have begun to transform into salt therapy centers. Salt caves in Spain (Cardona), Belarus (Soliharsk), Romania (Slanic, Salina Turda, and Praid), Poland (Wieliczka), Pakistan (Khewra), Germany (Berchtesgaden), Azerbaijan (Nakhchivan), and Turkey (Çankırı and Iğdır Tuzluca) are used for therapeutic purposes. Particularly, Çankırı Salt Cave and Iğdır Tuzluca Salt Cave are important resources in Turkey that can be evaluated within the scope of health tourism. In this study, a literature review, official website analysis, and on-site observations were conducted. In the literature review, previous research on the subject was examined. Through website analysis, the spatial units and recreational activities of the salt caves were identified. The spatial units and recreational activities of each salt cave were determined using the collected data. Subsequently, on-site observations were made by visiting the salt caves in Çankırı and Iğdır. During these observations, the spatial units within the salt caves were visited and photographed individually. Then, the data obtained from the literature, official website analyses, and on-site observations were combined. Finally, the characteristics of all the examined caves were tabulated, and based on the created table, the caves were evaluated. As a result of the evaluation, the Cardona Salt Mine in Spain stands out for its historical and cultural activities; the Nakhchivan in Azerbaijan, Soligorsk in Belarus, Slanic and Praid Salt Mines in Romania are treatment centers offering salt therapy services; the Salina Turda Salt Mine in Romania is an underground theme park; the Wieliczka Salt Mine in Poland, Khewra Salt Mine in Pakistan, and Berchtesgaden Salt Mine in Germany are primarily used for recreational purposes; while the developing Çankırı and Iğdır Tuzluca Salt Mines in Turkey are also noted for their recreational use.

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1. Introduction

Tourism is a significant factor that contributes to the economic, social, and cultural aspects of a country. Countries experiencing the massification of tourism have transformed their tourism potential into a significant source of income. This trend has become widespread in many countries around the world, leading to a cyclical interaction with the increase in tourism investments (Yurdakul & Özgencil, 2017). The tourism activities, previously conducted seasonally, have been diversified and spread throughout the entire year (Kuter, 2007). As a result of this diversification, alternative tourism sectors such as summer tourism, winter tourism, highland tourism, congress tourism, faith tourism, hunting tourism, yacht tourism, river-rafting tourism, underwater diving tourism, air sports tourism, and health tourism have been developed (Yurdakul & Özgencil, 2017). Global diversification of tourism activities has led to the emergence of health tourism, particularly as individuals facing health issues turn to alternative treatment methods.

In the context of a globalized world, the increase in international collaboration among countries, enhanced travel freedoms and opportunities, improved accessibility in transportation, advancements in the quality of healthcare services across various regions, and the individual and budgetary challenges faced in healthcare financing have collectively elevated the global significance of health tourism (Tontuş, 2017). The number of individuals traveling and staying outside their places of residence to access treatment centers, driven by economic and transportation feasibility, is increasing day by day. This growth has contributed to the development of health tourism. Health tourism, which has gained significant attention in recent years, gained momentum in the middle 1980s and continues to grow steadily to the present day (Şimşek, 2020).

Corresponding* ***Research Paper*

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Health tourism, which generates a significant income by hosting millions of tourists every year, has begun to emerge as a promising sector in Turkey (Öztürk & Öztürk, 2018). In 2022, 67.1% of visitors came for travel, entertainment, sports, and cultural activities, 21.3% for visiting family and friends, 4.6% for shopping, 3.0% for business purposes (conferences, meetings, assignments, etc.), 2.4% for health and medical reasons, 0.3% for education, and 1.2% for other touristic purposes. In 2023, 67.6% of visitors came for travel, entertainment, sports, and cultural activities, 20.6% for visiting family and friends, 4.9% for shopping, 2.9% for business purposes (conferences, meetings, assignments, etc.), 2.5% for health and medical reasons, 0.3% for education, and 1.2% for other touristic purposes. The number of visitors in 2023 increased by 11.1% compared to the previous year, reaching 57,077,440 people. Tourism revenue in 2023 increased by 16.9% compared to the previous year, reaching 54,315,542,000 dollars (TÜİK, 2024). The increase in both the number of tourists and tourism revenue is expected to support the development of health tourism. Health tourism, which is gaining increasing importance for countries, particularly contributes significantly to the local economy. Another area that has emerged due to the rise in the health sector is cave tourism. The positive effects of rock salt on human health have brought cave tourism to the forefront, and many salt caves around the world have started to undergo transformation within the scope of health tourism.

The widespread use of salt-based healing methods began in the mid-19th century (1843) when a Polish health official named Felix Botchkowski discovered that workers in salt mines did not contract lung diseases. Later on, it was observed that individuals who spent extended periods in salt mines used as shelters during World War II were relieved of asthma and other respiratory illnesses. Salt therapy (Speleotherapy) emerged as a non-pharmacological and effective method for treating specific types of chronic lung diseases, such as asthma and chronic obstructive pulmonary disease (COPD). Based on therapeutic applications created by the cave air saturated with particles of rock salt, this treatment proves beneficial for individuals with respiratory conditions (Çiçekoğlu, 2012). Salt therapies not only alleviate respiratory and asthma conditions but also prove beneficial for skin disorders such as eczema, acne, and psoriasis. They are known to relieve discomforts like stress, headaches, and depression while providing a sense of energy and mental alertness (Kasalak & Balıyev, 2020).

Due to the increasingly widespread salt therapy (Speleotherapy) in today's world, salt caves in many countries have started to transform into salt therapy centers. In Spain (Cardona), Belarus (Soliharsk), Romania (Slanic, Salina Turda, and Praid), Poland (Wieliczka), Pakistan (Khewra), Germany (Berchtesgaden), Azerbaijan (Nakhchivan), and in Turkey, the Çankırı and Iğdır Tuzluca salt caves are used for therapeutic purposes. Especially, Çankırı Salt Cave and Iğdır Tuzluca Salt Cave are significant resources that can be considered within the scope of health tourism in Turkey. Completing the infrastructure, supporting superstructure investments, and establishing salt rooms will encourage the increased use of these salt caves, ultimately making a significant contribution to the local economy.

The aim of this study is to evaluate the Çankırı and Iğdır salt caves within the scope of health and recreation tourism. In the study, priority was given to examining the salt mines of countries that previously recognized the significance of salt caves for health tourism and transformed them into destination centers for health and recreational activities. This examination identified the types of health and recreational activities conducted in these salt mines. Additionally, the diversity of spatial units within the interiors of the salt mines and the surrounding structures were investigated. Subsequently, field studies were conducted in the Çankırı and Iğdır salt caves to carry out on-site examinations. Through these examinations, the types of health and recreational activities and the spatial units they contain were identified and compared with examples from around the world. With this research, deficiencies were identified, and necessary recommendations were made for the Çankırı and Iğdır salt caves, which are still developing, to complete their development within the scope of health and recreation tourism.

2. Conceptual Framework

In parallel with the advancements in technology over the past decade, significant progress has also been made in the healthcare sector. Countries have begun investing in healthcare services to attract tourists under health tourism. Consequently, rapid advancements have been witnessed in the healthcare sector. One of the evolving areas in healthcare is salt cave tourism. Salt caves have become popular destinations for tourists lately as they are used for the treatment of conditions such as asthma and bronchitis. In this context, many countries have started investing in the multifunctional use of salt caves. As a result of these investments, various facilities for health and recreation purposes have been established within salt caves, and this trend continues. In Turkey, the rock salt mines in Çankırı and Iğdır have also been undergoing spatial development for health and recreation purposes in recent times. This study examines the spatial areas of the Çankırı and Iğdır salt caves and compares them with examples from around the World.

Prominent studies in the literature about Çankırı and Iğdır rock salt caves; Tuna (2022), Investigation of Caves in Turkey Within The Scope of Health Tourism, Öztürk and Öztürk (2018), Use of Salt Caves in the Context of Recreational Activity, Kasalak and Balıyev (2020), Evaluation of Salt Caves in Azerbaijan and Turkey in Terms of Health Tourism, Şimşek (2020), Health Tourısm Potentıal Of Nahcıvan Duzdağ, Güngörmez (2015), In Terms Of Economic Activity: Tuzluca Kaya, Timur *et al.*,

(2014), Evaluating of oriented tourism and recreational use Cankırı Rock Salt Cave's and its near surrondings, Şahbaz and Karaçar (2013), For Local Appeals to Tourism Attitude of Local People: Çankırı Salt Cave Case, Dede (2011), Evaluation of Çankırı salt caves in terms of medical geology. These studies mainly focus on the introduction of salt caves and their use for health and recreational purposes. There is a lack of research focusing on the spatial examination of salt caves in the literature. This study will address this gap in the literature and can serve as a foundation for future research.

Spain/Cardona Salt Cave

The Cardona Salt Mountain is not only a unique geological formation in Europe, but it also stands among the largest examples of its kind in the world (Bond, 2023). The Cardona Salt Mountain, operated as a salt mine until 1990, was opened to visitors in 1997 as the Cardona Salt Mountain Cultural Park. The museum inside the mine provides information about the history and structure of the salt mountain. Additionally, the museum houses old mining machinery used in the 1920s, antique equipment, tools, and a photography gallery (Figure 1). Access to the Cardona Salt Mountain is facilitated through guided tours and buses (Barcelona Tourist Guide, 2024), while visitors can obtain information about the destination via the website and social media (Cardona Turisme, 2024).

Azerbaijan/Nakhchivan Salt Cave

Duzdag, also known as the 'Salt Mountain,' a symbol of Nakhchivan, is an ancient salt mine that functions as a physiotherapy center offering salt therapies (speleotherapy). In this regard, it is one of the unique destination for health tourism. Visitors can explore the atmosphere through underground tunnels and spend time in this therapeutic environment (Figure 2) (The Azerbaijan State News Agency, 2024) Since its opening, the physiotherapy center has served approximately 50,000 people with asthma, allergies, and bronchitis (Duzdag Hotel, 2024).

Belarus/Soligorks Salt Cave

The Soligorsk Salt Mine is open to patients and staff within the scope of health tourism. The treatment center was opened in 1990 and has continued to grow steadily. Rooms and tunnels in the mine are commonly utilized as salt therapy (speleoteraphy) areas. In addition to this, there are recreational areas for activities such as table tennis, volleyball, running track, ping pong and exercise (Figure 3). Inside the salt mine, there is no television or internet available. Half of the visitors in the mine, used primarily for treatment purposes, are Belarusians whose stays are covered by the country's national health system, while the other half consists mainly of foreigners, mostly Russians, who stay for two weeks (Higgins, 2023).

Figure 1: Cardona Salt Cave

Source: (Cardona turisme, 2024)

Figure 2: Düzdağ Physiotherapy center, therapy room and Salt Cave

Source:(Duzdag physıotherapy center, 2024)

Figure 3: Therapy center and recreational area within Soligorsk Salt Cave

Source: (Hill, 2023)

Figure 4: Slanic Salt Cave

Source: (Paliparan, 2024)

Romania/Slanic Salt Cave

The Slanic Mine, located in Romania, is considered the second-largest salt mine in the world. Access to the mine is provided through two elevators. The salt mine is primarily used for health therapies, including cold baths in the lake, electrotherapy, and hot mineral water baths in tubs. Additionally, the salt mine features play areas, a sports field, a room with billiard tables, and a bar. Inside, there are sculptures carved from salt. The mine also showcases equipment used in the past for salt extraction and transportation (Figure 4) (Romanian Monasteries, 2024). Throughout the museum, there is a store where visitors can purchase food, safe areas for children to play, and rental ping pong tables (Zamfira, 2023).

Romania/Salina Turda Salt Cave

The Salina Turda Salt Mine, known as one of the world's oldest mines, was opened to the public in 2010 after renovation works. This mine, with an underground theme park, is open for visits by children, adults, and families. A panoramic elevator has been installed to provide visitors with a general overview of the entire mine. The park offers numerous activities, including an amphitheater, museum, ferris wheel, bowling alley, mini golf, billiards, table tennis, a playground for children, a basketball court, and an underground lake with rowboats and paddleboats (Figure 5). The space used for salt therapy is equipped with seating areas and tables. Additionally, there is an area showcasing machines and equipment used in the salt extraction and processing processes within the mine (Salina Turda, 2024).

Romania/Praid Salt Cave

The Praid Salt Mine has been used for salt therapy since the 1960s. Jacuzzis, swimming pools, and salt baths have been created for therapeutic purposes. Inside the mine, there is a salt museum showcasing salt sculptures, a chapel, billiard tables, libraries, a restaurant, a wine gallery, a coffee shop, a naturist drugstore, a 3D cinema, a play area for children, and creative and entertainment spaces (Figure 6) (Atlas Obscura, 2024; Salina Praid, 2024). Approximately 400,000 people visit the salt mine annually. During the summer season, the daily number of visitors can reach 2,500 to 3,000 people (Salina Praid, 2024).

Poland/Wieliczka Salt Cave

The Wieliczka Salt Mine has been listed as a UNESCO World Heritage Site since 1978 and stands as one of Poland's significant historical and cultural monuments. Visited by approximately 2 million people each year, only 2% of the salt labyrinth can be explored due to its size. Transforming from an industrial facility, the mine has become a world-renowned tourist attraction with its distinctive interior and atmosphere. Numerous sculptures made of salt can be found within the cave. Some celebrations, weddings, baptisms, and other events take place in the St. Anthony's Chapel and St. Kinga's Chapel

located inside the mine. The cave provides information about old mining tools, machinery, and the methods used for salt extraction and transportation in the past. Inside the mine, there is also a railway that was once used for transporting both salt ore and visitors (Figure 7) (Wieliczka, 2024).

Figure 5: Recreational areas within Salina Turda Salt Cave

Source: (Salina Turda, 2024)

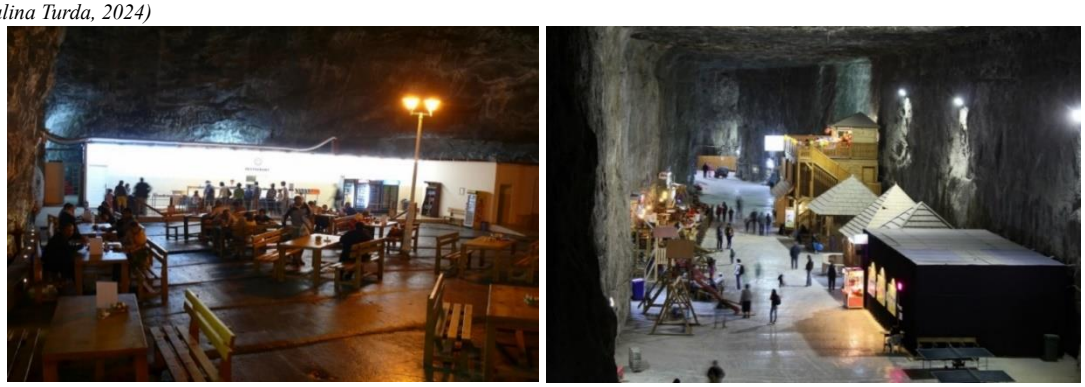

Figure 6: Interior view of Praid Salt Cave

Source: (Salina Praid, 2024)

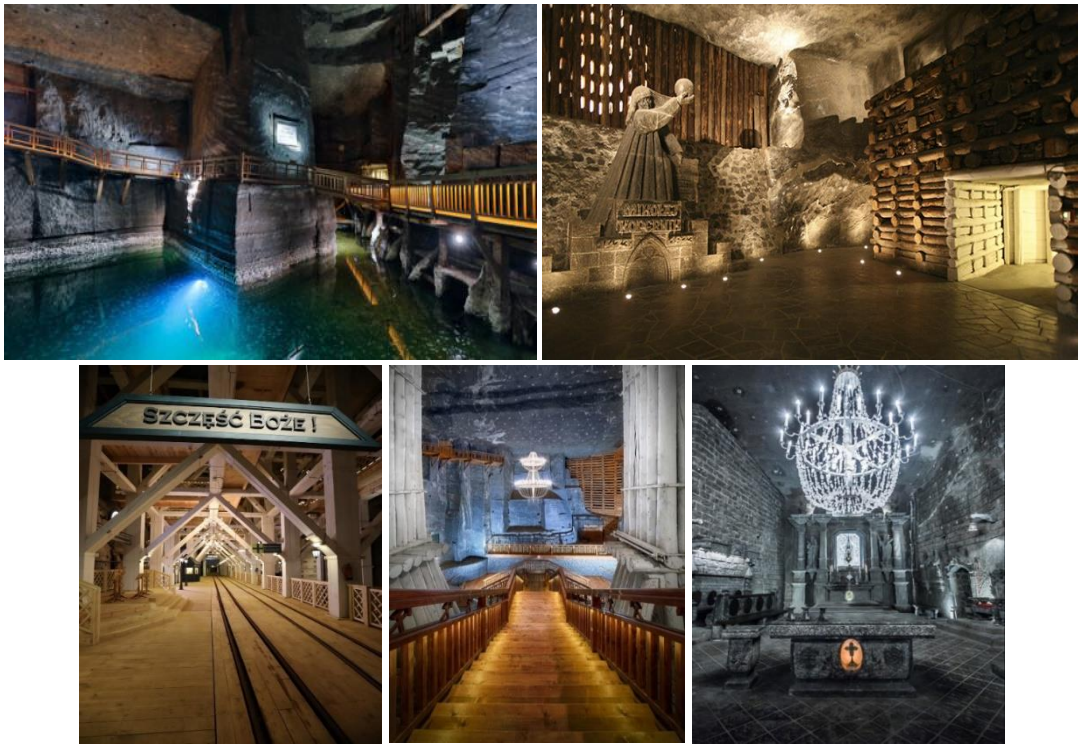

Figure 7: Recreational areas, St. Anthony's Chapel, and railway within Wieliczka Salt Cave

Source: (Wieliczka, 2024)

Pakistan/Khewra Salt Cave

The Khewra Salt Mine is a popular tourist destination located in Pakistan, known for having the country's largest salt reserves. Inside the mine, there is an emergency dispensary built from salt bricks. The Shahi Mosque, entirely constructed from salt bricks in the 1950s, is open for the worship of mine workers (Outhwaite, 2023). Additionally, Minar-e-Pakistan, one of the significant towers known as 'Pakistan's Freedom Tower,' built from salt bricks, is displayed inside the mine. Numerous illuminated saltwater pools and chambers are interconnected with salt-made bridges (Khaliq, 2023). To treat asthma developed due to allergies, an asthma facility with a capacity of 10 beds and 50 seats has been established in the salt mine. A reception or briefing hall has been constructed to provide more convenience to tourists. Moreover, electric train services have been introduced to ensure informative and enjoyable journeys for tourists to the main intersections inside the mine (Figure 8). With over 277,000 visitors annually, this facility has become an attractive destination for tourists (Pakıstan Mıneral Development Corporatıon, 2024).

Germany/Berchtesgaden Salt Cave

The Berchtesgaden Salt Mine has been in continuous operation since 1517. It features a salt cathedral where short films depicting the history of the mine and the lives of miners are shown through projections prepared from different scenes. Many salt chambers and galleries are equipped with visual effects. There is a specially prepared salt venue for dinner and a shop selling various salt products. Boat trips are organized on the underground lake inside the mine. Throughout the mine, old mining tools and machinery, as well as equipment used in the past for salt extraction and transportation, are exhibited. Additionally, a slide in the mine offers a unique underground experience. Moreover, there is a therapeutic gallery around the lake where visitors can find seating and resting areas. Arrival at the mine can be facilitated through public transportation and e-bikes. The railway inside the mine provides a comfortable and safe way to enter the mine gallery and explore the impressive dimensions of underground life (Figure 9). (Salzbergwerk, 2024).

Figure 8: Vievs from of Khewra Salt Cave

Source: (Khaliq, 2023)

Figure 9: Recreational areas within Berchtesgaden Salt Cave

Source: (Salzbergwerk, 2024)

3. Method

Due to recent developments in cave and health tourism, regulations for touristic activities have begun to be implemented in many salt mines. Within this context, tourists have started to show more interest in health and recreational activities in salt caves located in countries such as Spain, Azerbaijan, Belarus, Romania, Poland, Pakistan, and Germany. This interest is increasing day by day due to spatial diversity and activities for tourists. In this study, qualitative research methods, including literature review and on-site observation, were employed. In this context, searches were initially conducted in electronic databases such as Web of Science and Google Scholar using keywords like Tourism, Alternative tourism, Health tourism, Salt Cave, Salt Cave tourism, Speleotherapy, and Recreation. The search results compiled studies relevant to the topic, identifying current discussions, trends, and gaps in the field. In the literature review, although no detailed study was found that directly addresses the evaluation of the Çankırı and Iğdır salt caves within the scope of health and recreation tourism, various studies that cover different aspects of the Çankırı and Iğdır salt caves were encountered. To fill this scientific gap, a theoretical framework was developed based on the information obtained from the literature. Studies closely related to the topic, such as those by Timur et al. (2014), Öztürk and Öztürk (2018), and Kasalak and Balıyev (2020), were examined, and evaluation criteria were established as Health Activities, Recreational Activities, and Spatial Units. Within the scope of the study, eleven salt caves were analyzed. Except for the Çankırı and Iğdır salt caves, the other caves were examined using official websites and secondary data sources, which constitutes the most significant limitation of this study. Later, the salt caves in Çankırı and Iğdır were visited, and on-site observations were made. During these observations, the spatial units inside the salt cave were visited one by one and photographed. Findings were obtained by bringing together data collected from the literature, official websites, and on-site observations. Subsequently, the characteristics of all the examined caves were tabulated, and the caves were evaluated based on the created table. As a result of the evaluation, the characteristics of the salt caves relative to each other were determined, and the position of the Çankırı and Iğdır rock salt caves among world examples was also revealed.

4. Findings

Çankırı Salt Cave

Çankırı is located in the Central Anatolia region, 120 km from the capital Ankara, 90 km from Esenboğa Airport, and 450 km from Istanbul. Positioned in a strategic center with its geographical location, Çankırı has a rich cultural heritage dating back to ancient times. The city's natural attractions and resources, coupled with its deep-rooted history, provide a foundation for various tourist activities. Çankırı hosts a range of tourism activities, including cave tourism, thermal tourism, river and lake tourism, mountain and winter tourism, as well as plateau tourism. Additionally, different types of tourism, such as historical and cultural tourism, and faith tourism, are also developing in this region. Standing out with its natural, historical, and cultural richness, Çankırı is one of Turkey's cities with high tourist potential. Therefore, Çankırı not only serves as an attractive destination for tourists but also holds significant potential within the tourism sector.

The Çankırı Salt Mine is one of the oldest and largest salt mines globally known for salt production. Located within the boundaries of Balıbağı village, affiliated with the central district of Çankırı province, this mine is situated 18 kilometers east of the city center. Still operated by the private sector for salt production today, the galleries where salt production is completed have been transferred to Çankırı Municipality for the purpose of organizing and utilizing them for tourism (Çankırı Municipality, 2024).

Before being transferred to the municipality, there was a workshop in the area around the Salt Cave where salt blocks were processed, along with consultation offices and various storage facilities used for different purposes. Inside the cave, there were toilets and a prayer room, and in the gallery, animal figures were displayed in glass cases. There was no structural space designed for daily visitors in the cave, indicating a predominant focus on production rather than tourism. With the increasing recognition of the therapeutic properties of the Salt Cave in treating various illnesses such as asthma and bronchitis, the Municipality of Çankırı initiated efforts to utilize the surrounding area and empty galleries of the Salt Cave for tourism. In this context, renovation work on the road leading to the cave was initiated. Additionally, an administrative building with consultation rooms, a cafeteria, a prayer room, and toilets was constructed near the entrance section of the cave, along with the organization of a parking area.

As part of these arrangements, the construction of galleries featuring sculptures, reliefs, and the promotion of Yaran Culture, as well as facilities such as a restaurant, cafeteria, multipurpose meeting hall, children's play area, fossil museum, prayer room, cave interior lighting effects systems, decorative salt pool, sports activity areas, and salt therapy rooms for the treatment of lung disorders such as asthma and bronchitis, is ongoing within the cave (Figure 10). In this way, the cave will become a significant destination for health tourism (Çankırı Governorship, 2024).

Figure 10: Views from Çankırı Salt Cave

Source: (Authors)

Iğdır Tuzluca Salt Cave

The province of Iğdır, located in the Eastern Anatolia Region, is surrounded by Kars to the northwest, Ağrı to the southwest, Armenia to the north and northeast, the Nakhchivan Autonomous Republic (Azerbaijan) to the southeast, and Iran to the south and southeast. The province boasts a rich potential in terms of tourism values, with various tourist activities such as river and lake tourism, mountain and winter tourism, plateau and cultural tourism, as well as cave tourism. Additionally, the salt cave in the Tuzluca district constitutes one of the leading tourism potential sources in the province.

The rock salt deposits located to the east of the Tuzluca district have rich reserves. Simultaneously, the fact that this region is situated along the Silk Road has bestowed significance upon the area since ancient times. Dominant states in the region engaged in trade by extracting and processing the abundant salt deposits, thus trading with the rock salt they obtained (Güner *et al.*, 2011). The Salt Cave covers an area of approximately 55 acres, where production activities are currently ongoing. Mining operations have been completed in an area of about 12 acres, and this section has been allocated for use as a salt therapy center. The cave consists of two distinct sections. The first section, carved closer to the surface in times when technology was not yet fully developed, is where salt was extracted using excavation methods. The second section is deeper, obtained through tunnel excavations. This tunnel is approximately 3 meters wide and 80 meters long. At the end of the tunnel, carved rooms with ceilings ranging from 8 to 16 meters in height are reached (Özdemir *et al.*, 2022).

Prior to the initiation of efforts to integrate the Tuzluca Salt Cave into health tourism, the cave was utilized for salt production. No arrangements had been made inside or outside the cave. With the commencement of the project to incorporate the cave into health tourism, necessary adjustments were started in and around the cave. As part of

these arrangements, outside the cave, a management building, cafeteria, prayer room, toilets, a product sales area, and a parking lot were constructed. Inside the cave, therapy rooms, restaurants, a conference hall, seating areas, a prayer room, and toilets were also established (Figure 11). As part of the study, eleven salt caves were examined, and their evaluation was conducted under the headings of Health Activities, Recreational Activities, and Spatial Units. The obtained results are presented in Table 1.

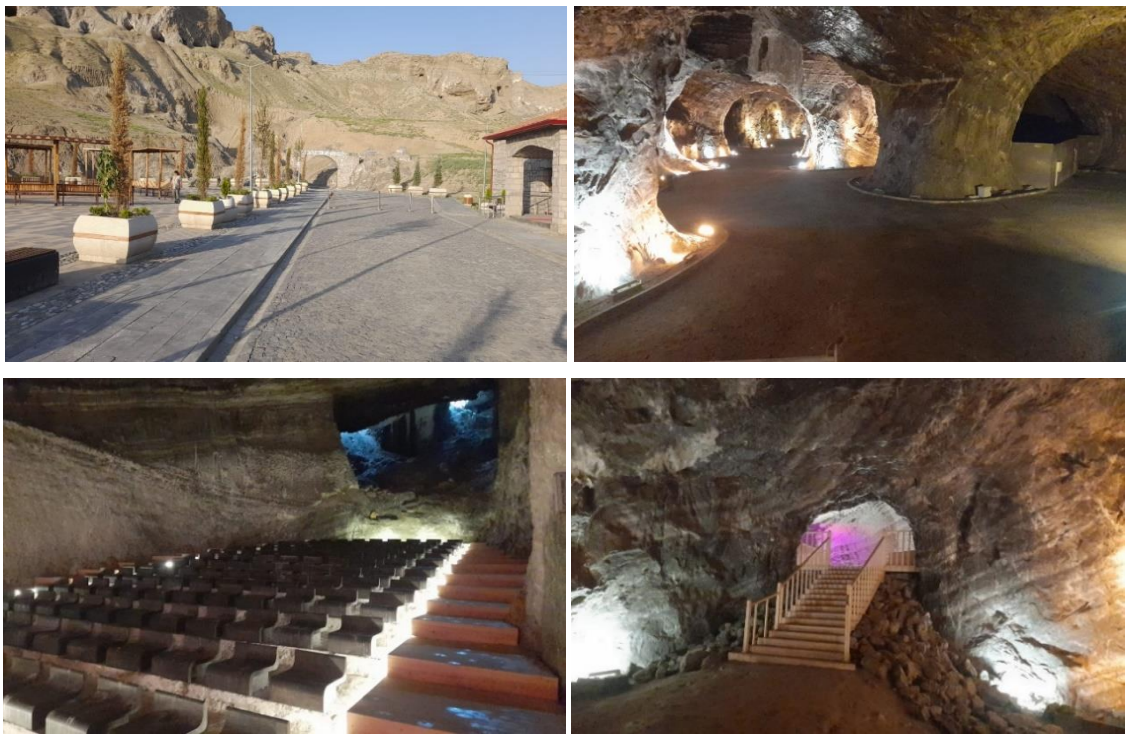

Figure 11: Views from Igdır Tuzluca Salt Cave

Source: Authors

Table 1: Evaluating Salt Caves under the Titles of Health Activities, Recreational Activities, and Spatial Units

	Health Activities	**Recreational Activities**	**Spatial Units**
Spain / Cardona Salt Cave	Salt Therapy	History and Culture Walking and Discovery	Gallery and Tunnels Therapy Rooms Museum
Azerbaijan / Nakhchivan Salt Cave	Salt Therapy Physiotherapy	Walking and Discovery	Gallery and Tunnels Therapy Rooms
Belarus / Soligorsk Salt Cave	Salt Therapy	Sports Activities	Gallery and Tunnels Therapy Rooms Sports Activity Area
Romania / Slanic Salt Cave	Salt Therapy Health Therapies	Walking and Discovery Sports Activities	Gallery and Tunnels Therapy Rooms Bar Area Sales Unit Sports Activity Area Exhibition Areas
Romania / Salina Turda Salt Cave	Salt Therapy Speleotherapy	Walking and Discovery Sports Activities Exhibition Tour Boat Trip	Gallery and Tunnels Therapy Rooms Salt Lake Exhibition Area Amphitheater Sports Activity Area Children's Play Area
Romania / Praid Salt Cave	Salt Therapy	Walking and Discovery Exhibition Tour	Gallery and Tunnels Swimming Pool and Salt Baths Museum Chapel

			Sales Unit Play Area Restaurant Underground Garden Library
Poland / Wieliczka Salt Cave	Salt Therapy	Walking and Discovery Weddings and Event Celebrations Exhibition Tour Railway Tour	Gallery and Tunnels Therapy Rooms Salt Lake Chapel Wedding and Event Area
Pakistan / Khewra Salt Cave	Salt Therapy	Walking and Discovery Exhibition Tour Railway Tour	Gallery and Tunnels Mosque Sales Unit Salt Lake Salt Clinic Dispensary Exhibition Area Saltwater Ponds
Germany / Berchtesgaden Salt Cave	Salt Therapy Speleotherapy	Walking and Discovery Short Film Screening Exhibition Tour Boat Trip Railway Tour	Gallery Salt Rooms Sales Unit Salt Lake Restaurant Salt Cathedral Exhibition Area Seating and Resting Areas
Çankırı Salt Cave	Salt Therapy	Walking and Discovery Exhibition Tour	Gallery and Tunnels Therapy Rooms Cafeteria Prayer Room Restaurant Multipurpose Meeting Hall Salt Pool Sports Activity Area Museum Children's Play Area Seating and Resting Areas
Iğdır Tuzluca Salt Cave	Salt Therapy	Walking and Discovery Exhibition Tour	Gallery and Tunnels Cafeteria Conference Hall Therapy Rooms Restaurants Prayer Room Seating and Resting Areas

Source: Authors

In the examined salt caves, various recreational activities are observed in addition to health activities. The prominent features of these mines are as follows;

- The Cardona Salt Cave in Spain stands out for its historical and cultural activities.
- The Nahchivan Salt Cave in Azerbaijan serves as a health center offering salt therapy services, attracting visitors primarily for therapeutic purposes. This salt cave is a significant hub for health tourism.
- The Soligorsk Salt Cave in Belarus stands out as a treatment center, with its tunnels primarily used for salt therapy. Additionally, there are recreational areas available for visitors benefiting from the treatment center.
- The Slanic Salt Cave in Romania is primarily used as a treatment center for health therapies. Therapies such as cold baths in the constructed lake inside the mine, electrotherapy, and hot mineral water baths in tubs are prominent.
- The Salina Turda Salt Cave in Romania is arranged as an underground theme park. Within this mine, various activity areas have been created where visitors can spend time and have fun with their children and families. Despite the salt therapy rooms created inside the mine, it stands out more for its underground theme park feature.
- The Praid Salt Cave in Romania is one of the mines used for salt therapy purposes. Jacuzzis, swimming pools, and salt baths used for therapeutic purposes stand out within the mine.

- The Wieliczka Salt Cave in Poland, with its unique interior, hosts many celebrations, weddings, and other events. The mine is mainly visited for tourist purposes.
- The Khewra Salt Cave in Pakistan is one of the salt mines that stands out for its recreational use.
- The Berchtesgaden Salt Cave in Germany is primarily known for its recreational areas.
- The Çankırı Rock Salt Cave is in the process of development and is being enhanced for health and recreational activities. It is observed that more emphasis is being placed on creating recreational areas.
- The Tuzluca Salt Cave in Iğdır, like the Çankırı Salt Mine, is also in the process of development. When its development is completed, it will be highlighted for its recreational areas.

In Azerbaijan, the Nahchivan Salt Cave, Belarus's Soligorsk Salt Cave, and Romania's Slanic and Praid Salt Cave are prominent destinations for health activities. However, the Cardona Salt Cave in Spain, Nahchivan Salt Cave in Azerbaijan, and Solihorsk Salt Cave in Belarus exhibit limitations in recreational activities and spatial units. On the other hand, diversity in recreational activities and spatial units is observed in Romania's Slanic, Salina Turda, and Praid Salt Cave, Poland's Wieliczka Salt Cave, Pakistan's Khewra Salt Cave, Germany's Berchtesgaden Salt Cave, as well as in the Çankırı and Iğdır Tuzluca Salt Cave.

The natural beauty and unique structure of salt cave offer a fun underground experience for those who wish to explore underground tunnels and savor the unique atmosphere. In addition to the venues where salt mines are used for health therapies, there are also places where both entertainment and cultural activities take place. Therefore, salt mines are an excellent choice for both health and entertainment purposes.

Studies have shown that salt caves, which are examined in terms of health activities, recreational activities, and spatial units, have a high tourism potential. Over time, salt caves are becoming increasingly valuable for both local residents and tourists.

5. Conclusion and Suggestion

The Çankırı and Iğdır-Tuzluca rock salt cave, which are important salt mines in Turkey, have recently gained prominence in terms of health tourism activities. In this study, the health activities, recreational activities, and spatial units of these salt mines, whose regulations are still ongoing, have been examined. Initially, rock salt caves used for health tourism and recreation purposes worldwide were examined, and relevant literature studies were conducted. Subsequently, the Çankırı and Iğdır-Tuzluca Salt Cave were examined and compared with other salt mines around the World.

As part of the research, various alternative suggestions can be proposed for cave tourism; however, general recommendations can be listed as follows:

The examined salt caves in the research encompass a variety of activity areas for health tourism, including salt therapy rooms, restaurants, bars, amphitheaters, Ferris wheels, museums, photography, sculpture and model galleries, places of worship, halls showcasing old mining machinery, antique equipment and tools, billiards, basketball, bowling, table tennis, volleyball, running and exercise spaces, children's playgrounds, souvenir and salt sales shops, as well as activities like salt and boat excursions. In this context, the mentioned activity spaces can be taken into consideration in the preparation of projects. Additionally, projects may include workshops for both children and adults, exhibitions of local artists' works and regional values, objects and models made of salt, and souvenirs, promoting the country and the region through the presentation of dishes from the local cuisines of Çankırı and Iğdır.

The Governorship, municipality, non-governmental organizations, academics, professional associations, and the public should collaborate on tourism initiatives. In this regard, efforts should be organized to increase the knowledge and awareness levels of the local population. Additionally, the authorities responsible for salt caves should encourage investors in areas such as infrastructure, financing, promotion, and marketing when developing projects related to salt caves.

Both the salt extraction operations and tourism-related activities in salt caves should be carried out in a controlled manner for the benefit of visitors.

The access roads to the cave should be suitable, safe, and easily navigable for vehicular transportation. Cave entrances should be well-defined and connected to transportation means, parking, and pedestrian pathways as much as possible. The entrance, corridors, bridges, and galleries of the cave should have adequate illumination. Informational, warning, and directional signs and panels related to salt caves should be prepared in accordance with international standards to inform, alert, and guide visitors

The promotional materials prepared for visitors, such as brochures, booklets, and websites, should comprehensively cover information about the caves and activities inside, and be prepared in various foreign languages

Organizing events such as salt-themed festivals, meetings, workshops, and symposiums at regular intervals will contribute to the development and growth of cave tourism in Çankırı and Iğdır.

Projects aimed at increasing cave tourism potential should encompass children, adults, families, and visitors coming

for health tourism. In this regard, accessibility to spaces should be considered for all visitors, including but not limited to people with disabilities, the elderly, and families with children.

Promotional activities for the area, facilitating transportation, expanding parking areas, increasing the presence of plants and green spaces, and adding landscaping elements are believed to enhance the tourism potential of the region (Çorbacı *et al.,* 2022).

Over time, people find themselves in need of social and psychological relief from the hustle and bustle of city life, even if only for a short while, and they visit such areas that have an effective impact in this regard. Therefore, areas of this kind are highly important and beneficial for people. Through these spaces, individuals find opportunities for renewal, leisure, fun, relaxation, and socialization. As a result, cities provide significant benefits to their users through these areas. With each passing day, these recreational spaces become even more valuable for both individuals and the city itself (Kartal *et al*., 2021).

Some recommendations have been proposed to increase tourism activities in Çankırı and Iğdır provinces, which have high potential for health tourism with their salt caves. The development of health tourism can provide significant support for the development of Çankırı and Iğdır provinces. Therefore, necessary arrangements should be made in the salt caves by considering the desires and needs of visitors.

Like many studies, this study also has some limitations. Firstly, it is limited to the salt caves with high tourism potential worldwide and the Çankırı and Iğdır/Tuzluca salt caves in Turkey, where tourism-related arrangements are ongoing. Additionally, the evaluation was made by examining health activities, recreational activities, and spatial units while examining salt caves. In the next study, it can be investigated what the expectations of tourists are about salt caves and what arrangements can be made in line with these expectations.

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INFO PAGE

Evaluation of Çankırı and Iğdır salt caves within the scope of health and recreation tourism

Abstract

With the increasing popularity of healing methods involving salt, the importance of salt mines has grown significantly over time. Today, as salt therapy (Speleotherapy) becomes more widespread, salt caves in many countries around the world have begun to transform into salt therapy centers. Salt caves in Spain (Cardona), Belarus (Soliharsk), Romania (Slanic, Salina Turda, and Praid), Poland (Wieliczka), Pakistan (Khewra), Germany (Berchtesgaden), Azerbaijan (Nakhchivan), and Türkiye (Çankırı and Iğdır Tuzluca) are used for therapeutic purposes. Particularly, Çankırı Salt Cave and Iğdır Tuzluca Salt Cave are important resources in Türkiye that can be evaluated within the scope of health tourism. In this study, a literature review, official website analysis, and on-site observations were conducted. In the literature review, previous research on the subject was examined. Through website analysis, the spatial units and recreational activities of the salt caves were identified. The spatial units and recreational activities of each salt cave were determined using the collected data. Subsequently, on-site observations were made by visiting the salt caves in Çankırı and Iğdır. During these observations, the spatial units within the salt caves were visited and photographed individually. Then, the data obtained from the literature, official website analyses, and on-site observations were combined. Finally, the characteristics of all the examined caves were tabulated, and based on the created table, the caves were evaluated. As a result of the evaluation, the Cardona Salt Mine in Spain stands out for its historical and cultural activities; the Nakhchivan in Azerbaijan, Soligorsk in Belarus, Slanic and Praid Salt Mines in Romania are treatment centers offering salt therapy services; the Salina Turda Salt Mine in Romania is an underground theme park; the Wieliczka Salt Mine in Poland, Khewra Salt Mine in Pakistan, and Berchtesgaden Salt Mine in Germany are primarily used for recreational purposes; while the developing Çankırı and Iğdır Tuzluca Salt Mines in Türkiye are also noted for their recreational use.

Keywords: *Tourism, Cave tourism, Salt cave tourism, Çankırı salt cave, Iğdır salt cave.*

Authors

Full Name	Author contribution roles	Contribution rate
Selim Kartal:	*Conceptualism, Methodology, Resources, Writing - Review & Editing, Funding acquisition*	*60%*
Tümay Güneş:	*Methodology, Visualization, Supervision*	*40%*

Author statement: *Author(s) declare(s) that All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.* ***Declaration of Conflicting Interests:*** *The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article*

This paper does not required ethics committee report

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