

Key factors affecting recreation for elderly groups – A case study from southern Taiwan

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ABSTRACT:The aim of this study was to explore the key factors affecting recreation in elderly groups. The research methods employed included a review of literature, in-depth interviews, the Delphi method, and a questionnaire. First, this study reviewed relevant studies to delineate potential key factors affecting recreation in elderly groups. Based on this, a questionnaire was designed and administered to target participants who were scholars, experts, and professionals associated with recreational activities for elderly groups. Then, the respondents' recovered opinions were summarized and the questionnaire was revised. The main purpose for administering the revised questionnaire was to verify the key factors affecting recreational activities for elderly groups, the factors served as the assessment criteria of this study for designing a questionnaire to be analyzed using the analytic hierarchy process (AHP). The results revealed that the order of the key factors affecting recreation in elderly groups was recreational travel, socially-oriented recreational activities, recreational sports, intellectually-oriented recreational activities, and recreational therapy.

Keywords- elderly groups, analytic hierarchy process, recreational therapy

I. INTRODUCTION

1. Research motivation and background

According to statistics from Taiwan's Ministry of the Interior, there were 3.52 million elderly people (older than 65 years) in Taiwan as of late June 2019. The National Development Council estimates that the proportion of elderly people will exceed 20% by 2026, which means Taiwan would become a super-aged society by then (Accounting and Statistics, Executive Yuan, 2019). When elderly people participate in sports, they would take into consideration factors such as effectiveness, feasibility, adherence, and risk of injury of the various sports and select the most suitable (Lai, 2003). Recreational activities are extremely beneficial for the physical and mental health of elderly groups. These activities only help elderly people to enjoy the free time they have in their post-retirement lives, but also convey the essence that these activities can be arranged and chosen at one's free will (Cheng & Hsia, 2014). Allowing elderly people to participate in recreational sports in their daily lives helps develop their mental and physical health. Moreover, providing services and meeting their needs would offer more incentives for elderly people to participate in recreational sports (Liu, Lin & Le, 2015). Zimmer, Hickey and Searle (1995) mentioned the four major functions of recreational sports for elderly groups— (1) Allowing them to make the most out of their free time and adapt to the reality of aging, thus achieving functional balance; (2) Providing them with opportunities to learn new skills and express themselves; (3) Assisting them to gain social support and enhance their dignity and sense of independence; and (4) Facilitating them to return to the ranges of social activities.

On the other end, there should be greater focus on the methods for assisting elderly people to select beneficial recreational activities physiological, psychological, social, and spiritual health to contribute to successful aging, so that the elderly population can become a national asset instead of a burden (Shih & Huang, 2017). Lin and Chaing (2015) wrote that participating in recreational activities is an indispensable aspect for the elderly, a positive significance toward retirement adjustment, and is also a means towards achieving successful aging. The author categorized recreational activities into five major types—(1) Outdoor activities, such as traveling and participating in local tours; (2) Fitness-oriented activities, such as dancing, practicing qigong, swimming, practicing tai chi, yoga, etc.; (3) Socially-oriented activities, such as participating in volunteer training programs, charitable organizations, and religious organizations; (4) Hobbies, such as listening to or playing music, photography, drawing, baking, doing culinary arts, making coffee and scented tea, soap-

making, etc.; and (5) Learning-oriented activities, such as learning a foreign language (Japanese, English, etc.), learning computer application, horticulture, becoming a household expert, boosting one's wellness, preparing medicinal cuisine, fortune-telling (Zi Wei Dou Shu), and making financial investments. Providing therapeutic recreational activities for elderly groups helps delay the onset of disabilities and increase their quality of life (Hu1, Chen & Chen, 2019). Traditional elderly care centers or nursing facilities are unable to meet the demands listed by today's elderly groups in their retirement plans, which highlights the feasibility and the need to develop long-term wellness communities for elderly groups (Lin & Chiu, 2010). In the study by Li (2015), recreational activities were listed based on preference among elderly groups, i.e. intellectually-oriented recreational activities, pastimes, social services-oriented recreational activities, and sports and fitness activities. Cultural tourism and heritage tourism are similar to each other and were well-received among the elderly. Elderly people are drawn to different cultures, customs, and heritage buildings because they are able to learn more about and experience traditional cultures and historic remains from the past. Elderly people who are particularly interested in these areas or who wish to gain a sense of nostalgia enjoy participating in these activities (Chang, Wang & Wen, 2016).

Even though there are plenty of local studies pertaining to recreational activities for elderly groups, the key factors affecting recreation for elderly groups remain in the dark. To this end, this study sought to identify the major factors affecting recreation for elderly groups in Taiwan.

2. Research objectives

Advancements in local healthcare as well as decent economic and health statuses among elderly groups have led to increased recreational demands. This study was based on the southern region of Taiwan and explored the key factors affecting recreation for elderly groups. The objectives of this study were to:

- (1) To examine the current state of development of recreation in elderly groups
- (2) To analyze the key factors affecting recreation in elderly groups in the southern Taiwan region and to develop a hierarchical framework for assessment.
- (3) To assess the relative weights of the key factors affecting recreation in elderly groups by means of the analytic hierarchy process (AHP) approach, thereby providing a reference for affiliated entities to develop recreational activities for elderly groups.

II. LITERATURE REVIEW

1. The current state of elderly groups in Taiwan

At present, elderly citizens make up around 15% of Taiwan's population. This proportion is expected to exceed 20% by 2026, which means that one out of every five people will be an elderly person, at which point Taiwan would be considered a super-aged society. Like their counterparts in Japan and the U.S., the baby boomer generation in Taiwan has access to a significant number of resources including experiences, connections, and finances. Their work experiences, education levels, and values differ from those of elderly groups in the past. Providing elderly groups with diversified businesses and services can assist all corners of a society to jointly create age-friendly and high-quality living environments, thereby increasing the overall happiness index of the society. To achieve the goal of striking a balance between economic growth and social development, it is envisaged that the government can provide more opportunities for small-and-medium enterprises during policy formulation, so as to incentivize them to promote the senior leisure and wellness industry (Tsao, 2013).

2. Recreational sports

Recreational sports refer to activities performed in time of leisure that specifically involve dynamic physical activity as opposed to other recreational activities that pertain to social connections, art, music, and social services (Shen, 1995). Recreational sports consist of ball games, outdoor sports, folk sports, dance-based exercises, fitness exercises, combat sports, water sports (on and in water), air sports, and other recreational exercises (Sports Committee, 1999). There are several reasons why people engage in recreational sports in general, such as enhancing physical fitness; meeting one's psychological needs, social needs, and knowledge needs; stimulating the production of hormones; and preventing diseases (Du & Li, 2003). Sporting values and the factors that motivate recreational sports participation are intrinsic factors; in terms of extrinsic factors, sporting values change over time and vary across generations (Lu, 2008). In light of growing numbers of participants in and types of recreational sports, elderly people who incorporate recreational activities into their daily life would be exposed to various forms of recreation. To this end, it is undoubtedly relevant for elderly people to participate in recreational sports throughout the long periods of their post-retirement life. Participation in recreational sports is currently second only to healthcare issues in terms of what elderly people consider important (Kuo, 2015).

3. Recreational travel

People spend their leisure in a myriad of ways. Attaining leisure through traveling is unquestionably a prestigious way of enhancing one's spirituality. Given that the number of people who travel for recreational purposes is on the rise, recreational tourism is no longer a form of consumption restricted to certain groups and is increasingly embraced by the general public (Jiang, 2006). Advancements in health technologies, increased attention to wellness, as well as rapidly aging populations have elevated the importance of senior recreational travel for the future tourism market. The intentions of elderly groups to engage in domestic tourism is closely related to their self-perceived health, with most elderly people desiring to travel with their family members (Liu, 2010). According to Kuo (2007), long-stays are a mix of recreation and tourism, in which visitors stay for extended periods of time compared to typical visitors. Long-stay visitors find it easier to adapt to the local way of life because they are in direct contact with the locals. By embracing the double role of a tourist and a resident, they are able to freely immerse themselves in leisure and recreational activities. The study by E (2015) identified five forms of domestic tourism that elderly people have participated in—complete tourism, vacation-oriented fitness exercises, ecotourism, religious tourism, and visiting friends and relatives.

4. Recreational therapy

The definition of recreational therapy according to the American Therapeutic Recreation Association (ATRA) is the provision of therapeutic services and the utilization of recreation-based approaches to improve the physical health and spiritual well-being of individuals with illnesses or physical disabilities (Buettner & Kolanowski, 2003). In essence, the physical activities entailed in recreational therapy provide elderly people with leisurely and recreational fun and further promote their health. These activities, which are appropriately present in the living environments of elderly people, virtually and gradually increase their activity levels and help improve their physical, mental, and spiritual health (Chen & Hu, 2018). Chen and Hu (2019) categorized different types of physical activities suitable for elderly people—dance, water activities, aerobic exercise, traditional martial arts (wushu), ball games, and digital motion control games. Unlike general exercises and competitive sports, physical activities with therapeutic effects should be specifically tailored to the age, training load, physiological needs, and pathological needs of elderly people. Most importantly, these activities must conform to the essence of leisure in recreational therapy (Chen & Hu, 2018).

5. Intellectually-oriented recreational activities

According to Li (2015), there are three types of intellectually-oriented recreational activities—A. Development-based recreational activities, such as reading, playing card games, playing chess, attending college programs designed for elderly people, attending lectures, and using the computer; B. Artistic recreational activities include appreciating literature, reciting poetry, painting (Chinese and Western), drawing comics and manga, collecting items, crafting, doing calligraphy, making floral arrangements, learning new skills, doing theater, etc.; and C. Religious recreational activities, which include chanting, worshipping, praying, going to a place of worship etc. Lin and Chaing (2015) indicated that learning-oriented recreational activities include learning a foreign language (Japanese, English, etc.), learning the computer, horticulture, becoming a household expert, boosting one's wellness, preparing medicinal cuisine, fortune-telling (Zi Wei Dou Shu), and making financial investments. Intellectually-oriented recreational activities help people fulfill their desires, achieve visual and tactile pleasure, promote spiritual growth, and feel personal satisfaction. Examples include educational activities, reading, going online, visiting a bookstore, participating in arts and literary activities, writing, appreciating literature, etc. (Lin, 2020).

6. Socially-oriented recreational activities

Chang (2012) defined socially-oriented recreational activities as leisure activities that enhance one's interpersonal relations and help them learn different ways of socializing. Li (2015) wrote that socially-oriented recreational activities include participating in volunteer training programs, charitable organizations, and religious organizations. Lin and Chaing (2015) classified social services-oriented recreational activities into A. Social activities (visiting friends, chatting over tea, attending community-based group dating) and B. Caregiving-focused recreational activities (babysitting one's own grandchildren or giving care to friends and family). Socially-oriented recreational activities give people the opportunity to broaden their network, participate in social activities, and serve other people, thus reducing the sense of loneliness. Other types of socially-oriented recreational activities include participating in charitable events, volunteer work, religious activities, political activities, and visiting friends (Lin, 2020). Lee, Chang, Hou and Hu (2015) grouped socially-oriented recreational activities into conversation, playing with one's grandchildren, and making friends.

7. Key factors related to recreation for elderly groups

Lin, Chang and Chang (2011) elaborated that the recreational activities enjoyed by elderly groups include health and fitness-oriented activities (such as jogging, hiking, strolling, mountaineering, cycling); entertainment-oriented activities (watching television, movies, growing fruits, vegetables, or plants); traveling; social activities (joining clubs or associations); arts and cultural activities (visiting temples and attending temple processions). Li (2015) classified three major types of recreational activities for elderly groups: (1) Intellectually-oriented activities, which further consist of three subtypes—A. Development-based recreational activities, such as reading, playing card games, playing chess, attending college programs designed for elderly people, attending lectures, and using a computer; B. Artistic recreational activities include appreciating literature, reciting poetry, painting (Chinese and Western), drawing comics and manga, collecting items, crafting, doing calligraphy, making floral arrangements, learning new skills, doing theater, etc.; and C. Religious recreational activities, which include chanting, worshipping, praying, going to a place of worship etc.; (2) Pastimes, which further consist of three subtypes—A. Recreational entertainment, such as singing karaoke, playing an instrument, listening to music, listening to the radio, watching television, performing/enjoying comic dialogue (xiangsheng), and practicing kouji; B. Recreational travel, such as traveling, visiting places, window shopping; C. Hobbies, such as collecting stamps, gardening, meditating, owning a pet, attending elderly clubs; and (3) Social services-oriented activities, which further consist of three subtypes—A. Social activities, such as visiting friends, chatting over tea, attending community-based group dating; B. Caregiving-focused recreational activities, such as babysitting one's own grandchildren or giving care to friends and family; and C. Social services-related activities, such as volunteering work (community services) and becoming a parent volunteer.

Lin and Chaing (2015) subjectively classified recreational activities into five major types based on college programs offered to elderly people —(1) Outdoor activities, such as traveling and local tour guiding; (2) Fitness-oriented activities, such as dancing, practicing qigong, swimming, practicing tai chi, doing yoga, etc.; (3) Socially-oriented activities, such as participating in volunteer training programs, charitable organizations, and religious organizations; (4) Hobbies, such as listening to or playing music, photography, drawing, baking, doing culinary arts, making coffee and scented tea, soap-making, etc.; and (5) Learning-oriented activities, such as learning a foreign language (Japanese, English, etc.), learning the computer, horticulture, becoming a household expert, boosting one's wellness, preparing medicinal cuisine, fortune-telling (Zi Wei Dou Shu), and making financial investments. Lee, Shih and Chiou (2007) identified five categories of recreational activities commonly practiced by elderly people—Pastimes (such as watching television, conversing, strolling, listening to the radio); Hobbies (such as playing chess, cards, mahjong, horticulture, raising animals, collecting items, scrapbooking, playing music, singing, enjoying Peking opera, attending concerts, stock trading, tea tasting); fitness-oriented activities (such as exercising, hiking, body building, dancing, swimming, traveling, window shopping); learning-oriented activities (such as photography, pursuing advanced studies, reading periodicals, writing, drawing, making handicraft), and social activities (such as playing with grandchildren, attending religious activities, visiting friends and family, volunteering, attending social and political gatherings).

Chang (2011) found that elderly groups in rural areas primarily participated in active recreational activities such as strolling, hiking, and cycling, while watching television was the main passive recreational activity undertaken. They participated less in heuristic recreational activities such as reading periodicals, playing chess, or attending arts and cultural activities. The participants of that study identified most with the item "Recreation enhances quality of life." Wu (2018) examined the relationships between the preferences, participation, and barriers of recreation among rural and urban elderly. They study highlighted the order of priority of recreational activities participated by elderly groups—social activities (having group meals, chatting, joining religious activities); pastimes (watching television, going online), hobbies (drinking coffee/tea, playing chess); fitness-boosting activities (strolling, playing croquet); and intellectually-oriented activities (reading, doing patchwork). The study by Li (2015) listed the order of recreational activities chosen by elderly groups based on preference as follows: intellectually-oriented activities, pastimes, social services-oriented activities, and sports and fitness activities; in which the most preferred combination was "intellectually-oriented activities + pastimes + socially-oriented activities + endurance-oriented activities."

III. RESEARCH METHOD

This study mainly explored key factors that affect recreation for elderly groups in southern Taiwan. The research methods utilized in this study included a review of literature, conducting in-depth interviews, the Delphi method, and the AHP approach. The research method is described as follows:

1. The hierarchical framework

A three-level AHP model was developed based on a review of relevant local and foreign studies, interviews with people associated with the key factors that affect recreation for elderly groups, as well as the recommendations of scholars and experts. The first level consisted of the overall goal of this study (key factors

that affect recreation for elderly groups); the second level assessed the relative importance of the selected levels; the third includes pairwise comparisons of each criterion. The hierarchical framework developed in this study is shown in Figure 1.

2. Questionnaire design

This study centered on the theme of the key factors affecting recreation for elderly groups. First, this study reviewed relevant studies to delineate the key factors that could potentially affect recreation for elderly groups. On this basis, a first questionnaire was designed and administered to target participants in southern Taiwan who were scholars, experts, and professionals in the field of recreational tourism. Ten questionnaires were administered, six of which were recovered. Based on the recovered responses, respondent opinions were summarized and the questionnaire was revised. Six revised questionnaires were administered, four of which were recovered. The goal of administering the second (revised) questionnaire was to check for the consistency of the respondents’ opinions regarding the key factors affecting recreation for elderly groups. These factors were then collated to serve as the assessment criteria for this study. After recovering the revised questionnaire, the opinions of the scholars, experts, and professionals were summarized and a AHP questionnaire was designed. This questionnaire was administered to visitors to homestays in southern Taiwan. Of the 350 questionnaires administered, 256 were recovered, indicating a response rate of 73.14%. The results of this questionnaire were analyzed via AHP using the Expert Choice software, together with the weight of each dimension. Prioritization of factors was determined based on the weight. This approach provides a simple and feasible strategic model for professionals in the field of recreational tourism.

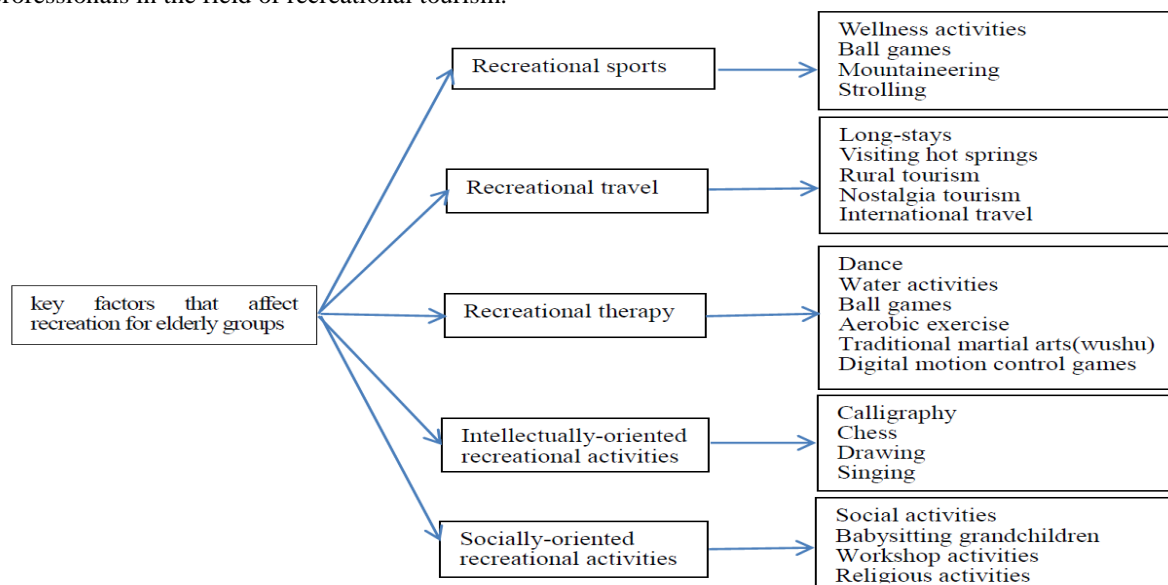


Figure 1. Hierarchical framework

IV. Results and discussion

The Expert Choice 2000 software was used to analyze the questionnaire, so as to prioritize the key factors affecting recreation for elderly groups, as well as to determine the importance and priority of the factors in each level. The results are explained as follows:

1. Analysis of key factors affecting recreation for elderly groups

Regarding the five major dimensions containing key factors affecting recreation for elderly groups, the AHP results revealed that the weight of “recreational sports,” “recreational travel,” “recreational therapy,” “intellectually-oriented recreational activities,” and “socially-oriented recreational activities” dimensions was 0.206, 0.211, 0.178, 0.198, and 0.207, respectively. This shows that the greatest factor affecting recreation for elderly groups was “recreational travel,” followed by “socially-oriented recreational activities,” “recreational sports,” “intellectually-oriented recreational activities,” and “recreational therapy.” The confidence interval (CI) and the composite reliability (CR) of the matrix was 0.00 and 0.02, respectively (both were ≤ 0.1), which suggest that the determinations were consistent and the consistency was acceptable. The data is specified in Table 1.

Table1 Analysis of key factors affecting recreation for elderly groups

Level	AHPevaluation indicator	Level weight	Order of precedence
	Recreational sports	0.206	3

1	Recreational travel		0.211	1
	Recreational therapy		0.178	5
	Intellectually-oriented recreational activities	recreational	0.198	4
	Socially-oriented recreational activities	recreational	0.207	2
C.I.=0.00		C.R.=0.02		

2. Analysis of factors within the “recreational sports” dimension

Regarding the level 2 dimension of “recreational sports” within the key factors affecting recreation for elderly groups, the AHP results revealed that “wellness activities” had the highest weight (0.267), which indicates that this factor was most prioritized by elderly people. This was followed by “mountaineering,” “strolling,” and “ball games,” with a weight of 0.265, 0.240, and 0.228, respectively. The CI and CR of the matrix was 0.00 and 0.02, respectively (both were ≤ 0.1), which suggest that the determinations were consistent and the consistency was acceptable. The data is specified in Table 2.

Table2 Analysis of factors within the “recreational sports” dimension

Level	AHPevaluation indicator			
	Location		Level weight	Order of precedence
2	Wellness activities		0.267	1
	Ball games		0.228	4
	Mountaineering		0.265	2
	Strolling		0.240	3
C.I.=0.00		C.R.=0.02		

3. Analysis of factors within the “recreational travel” dimension

Regarding the level 2 dimension of “recreational travel” within the key factors affecting recreation for elderly groups, the AHP results revealed that “visiting hot springs” had the highest weight (0.261), which indicates that this factor was most prioritized by elderly people. This was followed by “nostalgia tourism,” “international travel”, and “rural tourism,” with a weight of 0.201, 0.199, and 0.183, respectively, while “long-stays” brought up the rear (0.157). The CI and CR of the matrix was both 0.01 (≤ 0.1), which suggest that the determinations were consistent and the consistency was acceptable. The data is specified in Table 3.

Table3 Analysis of factors within the “recreational travel” dimension

Level	AHPevaluation indicator			
	Location		Level weight	Order of precedence
2	Long-stays		0.157	5
	Visiting hot springs		0.261	1
	Rural tourism		0.183	4
	Nostalgia tourism		0.201	2
	International travel		0.199	3
C.I.=0.01		C.R.=0.01		

4. Analysis of factors within the “recreational therapy” dimension

Regarding the level 2 dimension of “recreational therapy” within the key factors affecting recreation for elderly groups, the AHP results revealed that “aerobic exercise” had the highest weight (0.184), which indicates that this factor was most prioritized by elderly people. This was followed by “traditional martial arts (wushu),” “dance”, “ball games,” and “digital motion control games” with a weight of 0.175, 0.168, 0.164, and 0.157, respectively, while “water activities” brought up the rear (0.152). The CI and CR of the matrix was both 0.02 (≤ 0.1), which suggest that the determinations were consistent and the consistency was acceptable. The data is specified in Table 4.

Table4 Analysis of factors within the “recreational therapy” dimension

Level	AHPevaluation indicator			
	Location		Level weight	Order of precedence
2	Dance		0.168	3
	Water activities		0.152	6
	Ball games		0.164	4
	Aerobic exercise		0.184	1

	Traditional martial arts (wushu)	0.175	2
	Digital motion control games	0.157	5
C.I.=0.02		C.R.=0.02	

5. Analysis of factors within the “intellectually-oriented recreational activities” dimension

Regarding the level 2 dimension of “intellectually-oriented recreational activities” within the key factors affecting recreation for elderly groups, the AHP results revealed that “singing” had the highest weight (0.315), which indicates that this factor was prioritized higher by elderly people. This was followed by “drawing,” “calligraphy”, and “chess,” with a weight of 0.230, 0.240, and 0.192, respectively. The CI and CR of the matrix was both 0.00 (≤ 0.1), which suggest that the determinations were consistent and the consistency was acceptable. The data is specified in Table 5.

Table5 Analysis of factors within the “intellectually-oriented recreational activities” dimension

Level	AHPevaluation indicator		
	Location	Level weight	Order of precedence
2	Calligraphy	0.240	3
	Chess	0.192	4
	Drawing	0.250	2
	Singing	0.315	1
C.I.=0.00		C.R.=0.00	

6. Analysis of factors within the “socially-oriented recreational activities” dimension

Regarding the level 2 of the “socially-oriented recreational activities” dimension within the key factors affecting recreation for elderly groups, the AHP results revealed that “social activities” had the highest weight (0.314), which indicates that this factor was most prioritized by elderly people. This was followed by “babysitting grandchildren,” “religious activities”, and “workshop activities,” with a weight of 0.264, 0.232, and 0.191, respectively. The CI and CR of the matrix was 0.01 and 0.01, respectively (≤ 0.1), which suggest that the determinations were consistent and acceptable. The data is specified in Table 6.

Table6 Analysis of factors within the “socially-oriented recreational activities” dimension

Level	AHPevaluation indicator		
	Location	Level weight	Order of precedence
2	Social activities	0.314	1
	Babysitting grandchildren	0.264	2
	Workshop activities	0.191	4
	Religious activities	0.232	3
C.I.=0.00		C.R.=0.01	

V. Conclusions and recommendations

1. Conclusion

This study utilized the AHP approach to construct the key factors and assessment criteria related to recreation for elderly groups, so as to provide professionals in the field of recreational tourism with a simple and feasible strategic model. Based on the literature review as well as in-depth interviews and questionnaire results gathered from scholars, experts, and professionals in the field of recreation for elderly groups, the five major dimensions affecting recreation for elderly groups were “recreational sports,” “recreational travel,” “recreational therapy,” “intellectually-oriented recreational activities,” and “socially-oriented recreational activities.” The order of priority was “recreational travel,” “socially-oriented recreational activities,” “recreational sports,” “intellectually-oriented recreational activities,” and “recreational therapy,” which corresponded to weights of 0.211, 0.207, 0.206, 0.198, and 0.178. The following is a detailed analysis of the factors within each dimension of each level 2:

(1) Recreational sports

The “recreational sports” dimension consisted of four factors: “wellness activities (tai chi, yuan ji dance, qi gong),” “ball games (table tennis, badminton),” “mountaineering,” and “strolling,” which corresponded to weights of 0.267, 0.228, 0.265, and 0.240. “Wellness activities” was the major factor affecting recreation for elderly groups, a result that was in line with the study by Tseng, Li, and Lu.

(2) Recreational travel

The “recreational travel” dimension consisted of five factors: “long-stays,” “visiting hot springs,” “rural tourism,” “nostalgia tourism,” and “international travel,” which corresponded to weights of 0.157, 0.261,

0.183, 0.201 and 0.199. "Visiting hot springs" was the major factor affecting recreation for elderly groups, a result that was in line with the study by Huang (2010), which indicated that the main health tourism product in domestic tourism was visiting hot springs.

(3) Recreational therapy

The "recreational therapy" dimension consisted of six factors: "dance," "water activities," "ball games," "aerobic exercise," "traditional martial arts (wushu)," and "digital motion control games," which corresponded to weights of 0.168, 0.152, 0.164, 0.184, 0.175, and 0.157. "Aerobic exercise" was the major factor affecting recreation for elderly groups. This result is in line with the study by Su (2013), who verified that aerobic exercises significantly improve mental and physical functioning among elderly groups.

(4) Intellectually-oriented recreational activities

The "intellectually-oriented recreational activities" dimension consisted of four factors: "calligraphy," "chess," "drawing," and "singing," which corresponded to weights of 0.240, 0.192, 0.250, and 0.315. "Singing" was the major factor affecting recreation for elderly groups. This could be due to technological advancements whereby people can sing to their mobile phones on the go.

(5) Socially-oriented recreational activities

The "socially-oriented recreational activities" dimension consisted of four factors: "social activities," "babysitting grandchildren," "workshop activities," and "religious activities," which corresponded to weights of 0.341, 0.264, 0.191, and 0.232. "Social activities" was the major factor affecting recreation for elderly groups.

2. Recommendations

Because the key factors affecting recreation for elderly groups developed in this study were limited to a certain part of the Taiwan region, it is recommended that subsequent studies could expand the scope to include all parts of the country such that the key factors are better articulated.

REFERENCE

- [1] Accounting and Statistics, Executive Yuan (2019). State Statistics Bulletin. <https://www.dgbas.gov.tw/public/Data/9717160105LGQ42NT.pdf>
- [2] Buettner, L. and Kolanowski, A. (2003). Practice guidelines for recreation therapy in the care of people with dementia (CE). *Geriatric Nursing*, 24(1), 18-25.
- [3] Chang, H. C. (2011). Research on the needs of leisure activities for the rural elders in taichung area. *Research Report on Taichung District Agricultural Improvement Farm*, 112:33-43.
- [4] Chang, S. H. (2012) Influence of family factors on leisure and Recreation Act-Vocational High Schools in Taoyuan County as a Case Study. (Unpublish master's thesis), Graduate Institute of Leisure and Recreation Management, Hsing-Wu College.
- [5] Chang, H. H. Wang, S. M. and Wen, P. C. (2016). Turning crisis into turnaround: develop tourism products for the silver-haired people. *Economic Outlook Bimonthly*, 168, 81-85.
- [6] Chen, I. H. and Hu, K. Y. (2018). Therapeutic Recreation as an Intervention on Health Promotion Through Physical Activity for the Elderly. *Sports Research Review*, 147, 31-41.
- [7] Chen, I. H. and Hu, K. Y. (2019). The effect of therapeutic recreation in physical activity on successful aging for the elderly, *Journal of Physical Education and Leisure*, 17, 21-33.
- [8] Du, J. F. and Li, Z. F. (2003). Research on the Differences in Motivation of Students' Participation in Sports Leisure at National Chengchi University. *National Chengchi University Sports Research*, 15, 103-119.
- [9] Hu, K. Y. Chen, I. H. and Chen, Y. C. (2019). Effects of 8 week therapeutic recreation on well-being for elders. *Journal of Physical Education and Leisure*, 17, 35-43.
- [10] Huang, C. C. (2010). Wellness Tourism Consumer Behavioral Analysis of Participants for Hot Spring Hotel Industry, (Unpublish master's thesis), Graduate Institute Hospitality Management, National Kaohsiung Hospitality College.
- [11] Jiang, S. M. (2006). Research on the characteristics of leisure tourism and the attraction strategies of female leisure tourism. *Tourism research*, 02, 64-66.
- [12] Kuo, M. L. (2007). A study on cognition and attitude of developing long stay community for puli's residents. (Unpublish master's thesis), Dept. of Leisure Services Management, Chaoyang University of Technology.
- [13] Kuo, F. K. (2015). A study of the participation motivation and well-being of elderly leisure sport. *Journal of sport health and leisure*, 6, 107-121.

- [14] Lai, C. C. (2003) . Discussion on the relationship between physical activity and sleep quality of the elderly. *Sports Research Review*, 65, 167-175.
- [15] Lee, W. L. Shih, J. B. and Chiou, S. L. (2007). Leisure activity participation and happiness among the retired elderly in kaohsiung. *Journal of Humanities and Social Sciences*, 3(2), 27-35.
- [16] Lee, S. H. Chang, S. C. Hou, J. S. and Hu, J. H. (2015). A study of senior citizens' leisure activities affordance of neighborhood parks. *Journal of Landscape Architecture*, 20(3) : 71-94.
- [17] Li, Y. C. (2015). Conjoint analysis of leisure activity preferences of the elderly. *Marketing Review*, 12(2), 215-229.
- [18] Lin, T. Y. Chang, C. C. and Chang, S. C. (2011). A study on the style of leisure activity and preference of senior citizens - as example from wujie township, i-lan county. *Journal of Sport and Recreation Research*, 5(4) , 66-82.
- [19] Lin, J. M. (2020). The study of work pressure, leisure activity and work performance impact factor in resident care assistants in independent-supporting care organizations, (Unpublish master's thesis), Dept. of GTSM, Nan Kai University of Technology.
- [20] Lin, C. J. and Chaing, H. H. (2015). A study on the relationships among the types of leisure activity, leisure involvement and leisure benefits to seniors' successful aging. *Yu Da Academic Journal*, 40, 57-86.
- [21] Lin, Y. P. and Chiu, S. T. (2010). Discussion on the possibility of long-stay leisure development in domestic silver-haired community. *NCYU Physical Education Health, Health & Recreation journal*, 9(1), 267-273.
- [22] Liu, W. Z. (2010). A Study on the Domestic Tourism Consumption Behavior of the Silver-haired People in Taichung Metropolitan Area. *Journal of Sport Health and Leisure*, 15 , 108-118.
- [23] Lu, W. C. (2008). A study of the sport value and sporting recreation participating motivation of badminton athletes in college. *Archives of University Education and Sports*, 05, 463-469.
- [24] Shen, I. I. (1995) . Study on demand for recreational sports facilities by labors in taichung district. (Unpublish master's thesis), Graduate Institute of Physical Education.
- [25] Shih, H. L. and Huang, C. Y. (2017). A study of senior citizen's leisure sport on the relationship between participation motivation, flow experience and successful aging. *Journal of Sport Health and Leisure*, 8, 134-147.
- [26] Sports Committee (1999) . Research results of the current situation, demand and development countermeasures of youth leisure sports in my country. Sports Committee of the Republic of China.
- [27] Su, H. F. (2013). The influence of frailty levels on the effects of exercise intervention on elderly's functional fitness. *Journal of Recreation Sport and Health Promotion*, 5, 76-100.
- [28] Tsao, P. H. (2013). Suggestions on the development of leisure and production industry for the silver-haired people. *Taiwan Economic Forum*, 10, 63-105.
- [29] Tseng, Y. T., Li, S. C. and Lu, C. (2014). A study of senior leisure health-conscious: take taichi health experience and happiness for example. *Journal of Sports Health and Leisure*, 5, 232-249.
- [30] Wei, C. and Hsia, L. H. (2014). Seniors leisure participation interest, influence factors and purpose's first exploration- seniors in kaohsiung city as an example. *TamKang Journal of Physical Education*, 17, 28-37.
- [31] Wen, S. J. (2015). A study on goal type of domestic travel for the elderly in taiwan, (Unpublish master's thesis), Department of Cultural and Creative Enterprise Management, Nanhua University.
- [32] Wu, S. T. (2018). Leisure preferences, participations, and constraints of senior citizens between urban and rural areas: the case study of kaohsiung city. *Journal of Tourism and Leisure Management*, 6(1), 141-152.
- [33] Zimmer, Z., Hickey, T., and Searle, M. S. (1995). Activity participation and well-being among older people with arthritis. *The Gerontologist*, 35(4), 463-471.