沖縄におけるレジャーライフスタイルと健康の研究

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Leisure Lifestyle and Health in Okinawa

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Abstract

Limited previous research on leisure (both active and passive leisure) investigated how leisure activities impact people's health in cross-cultural settings and there is no research on exploring relationships between leisure activities, leisure constraints, and health. In this study, a total of 250 questionnaires are collected at the end of a two-week data collection period in an aging village in Okinawa, Japan. Average age of the samples is 71.10 year old with 53.6 percent male participants. This study confirmed that leisure lifestyle (leisure activities and leisure constraints) impacts physical and mental health. Leisure lifestyle has positive outcomes that improve well-being, increase happiness, and reduce stress. In addition, socioeconomic status (SES) has no impact on health, however, only age and education level were moderately related to leisure lifestyle including leisure activities and leisure constraints. This study contributes to understandings of the relationship between leisure lifestyle, health, and SES cross-culturally.

余暇（レジャー）が人々の健康に及ぼす影響について異文化間において検証された研究はこれまでほとんどみられず、日本において余暇活動および制約要因と健康との関係を明らかにしたものはない。本研究では、長寿地域として知られる沖縄県を対象に、本島都市部郊外部の間に位置し県高齢化人口比率に近似する北中城村において、余暇活動および余暇制約要因と健康に関するアンケート調査を実施した。調査表の回収総数は 250（男性 134 名、女性 116 名）、回答者の平均年齢は 71.1 歳であった。分析の結果、余暇活動と制約要因と心身の健康に有意な関連が認められた。年齢、教育レベルと余暇活動および余暇制約要因にも関連が認められた。社会経済因子と健康には関連が認められなかった。ケースが少なく更なる調査が必要であるが、社会経済要因や文化背景要因が異なるアメリカ、台湾、韓国、中国で筆者らが実施してきた先行研究と比較可能な研究と考えられる。

Key words
Leisure Lifestyle, Health, Okinawa

Introduction

Okinawa is an isolated island located in the most southwestern prefecture of Japan. The region has been a world leader in life expectancy and positive health profiles for decades. The positive health profiles have resulted in a low risk

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for major age-related, chronic diseases (Willcox, Willcox, He, Wang and Suzuki, 2008). By 2000, according to Japan Ministry of Health and Welfare life, Okinawa has even surpassed rest of Japanese prefectures, Sweden, and United State (U.S.) to lead the world in life expectancy with an average age of 81.2. Although genetics, caloric restriction, and healthy cognitive aging are considered to be contributors to the health of elderly Okinawan's health (The Okinawa Centenarian Study, 2008), particular physical activities (active leisure) related to these changes have not been identified by researchers. On the other hand, Cockerham and Yamori (2001) addressed that unique leisure lifestyles (e.g., family gatherings including feasting and ceremonies honoring ancestors) are more important than sense of social hierarchy for longevity in Okinawa. Because Cockerham and Yamori did not focus on exploring leisure lifestyle in their study, they admitted that their data limitations constrained their full assessment on relationships between leisure and health in Okinawa, Japan. In existing leisure studies literature, leisure researchers documented relationship between park use and leisure constraints, stress-coping strategies and health, and therapeutic recreation and health in North America. However, these studies have a little help for researchers to understand how leisure contribute to health in cross-cultural settings such as Okinawa where has heathiest elder population in the world. Therefore, this study is to examine relationship between leisure and health in a cross-cultural setting.

Literature review

Leisure activities

Leisure activities are important to healthy living. A leisure lifestyle includes activities that involve time spent in pleasurable ways, away from work with freedom to choose to the activities (Godbey, 1999). While leisure has been defined as time, activity, or as a state of existence or mind (Godbey, 1999), leisure has been traditionally studied as certain kinds of activities. These activities have typically been regarded as unobligated, occurring in relatively free time, generally pleasurable, and psychologically absorbing. Leisure begins with the informal interactions with variability from community to community associated with resources, climate, and cultural interests (Kelly, 1983). Leisure in terms of activities has been measured in different ways according to the particular interests of leisure researchers. According to previous research, leisure activities have been investigated in terms of: (a) outdoor recreation (Ferris,1962); (b) time use (Szalai, 1972); (c) psychological perspectives (McKechnie, 1974; Ragheb,1980); (d) social context (Kelly, 1983); (e) consumer behaviors (Mitchell, 1983); (f) seriousness (Stebbins, 1992), and (g) lifestyles (Simpson and Cheney, 2007; Dong, 2008).

Leisure Constraints

The forms of leisure in which people actually engage and those in which they would like to engage may be inconsistent for a variety of reasons. They may lack time or money, or not have the requisite skills for engaging in the desired activities. Over the past 40 years, the reasons for which individuals are unable to engage in desired leisure activities have come to be known as "leisure constraints."

The origin of the concept of leisure constraints derived from barrier studies conducted by the Outdoor Recreation Resources Review Commission (ORRRC) five decades ago in the U.S. Later, Jackson (1988) defined leisure constraints as "factors that inhibit people's ability to participate in leisure activities, to spend more time doing so, to take advantage of leisure services or to achieve a desired level of satisfaction" (p. 203). Crawford and Godbey (1987) suggest barriers should be categorized according to three types: (1) intrapersonal, (2) interpersonal, and (3) structural constraints. Intrapersonal constraints are the psychological factors such as stress, depression, or mood that affect personal choices. Interpersonal constraints are the results of interaction with other individuals such as family members,

friends, neighbors, and colleagues. Structural constraints are intervening variables between leisure preferences and involvement, such as lack of time, busy work, and cost of activities. As a theory and model, the specific conceptual development of leisure constraints occurred between 1987 and 1991, which challenged the naive early constraints research (Jackson, 2005). Although leisure constraints research has been conducted based on the three-dimensional categories of constraints, Chick and Dong (2003) claimed that culture should be considered as a constraint in the three-dimensional model proposed by Crawford, Jackson and Godbey in 1991. Leisure constraints have been studied in terms of (a) gender (Henderson & Ainsworth, 2000), (b) aging (McGuire & Norman, 2005), (c) adolescence (Caldwell & Baldwin, 2005), and (d) diversity (Shinew & Floyd, 2005; Washburne, 1978; and Stodolska & Jackson, 1998).

Leisure activities, leisure constraints, and health

The potential contributions of leisure to health have received increasing attention from a public and population health perspective. Increasingly, leisure is viewed as a domain of lifestyles that are important for people's health (Mannell, 2007). As previous literature documented, active leisure (exercise or physical activity) can reduce the risk of heart disease by enhancing cardiovascular health (Lee and Paffenbarger, 2000). Leisure activities, as one of community factors, have been recommended by National Institute of Health of the U.S. (NIH) to serve as interventions that could reduce health disparities. In addition, active leisure has shown to be related to increased physical self-esteem and quality of life (Elavsky et al., 2005). Mannell (2007) summarized explanations of the link between leisure and psychological wellbeing based on the following five themes: (1) keeping idle hands and minds busy, (2) pleasure, relaxation and fun, (3) personal growth, (4) identity formation and affirmation, and (5) resource for coping with stress. However, non-exercise forms of leisure (passive leisure) have not been well-documented to show a positive impact on either physical or psychological health (Mannell, 2007). Furthermore, there is limited previous research on leisure (both active and passive leisure) investigated how leisure activities impact people's health in cross-cultural settings and there is no research on exploring relationships between leisure constraints and health.

Previous research on leisure and health in Okinawa

Among health-related research publications, more than 200 peer-reviewed publications generated by the Okinawa Centenarian Study (OCS) regarding elderly Okinawans' health since 1975. Based on findings of the OCS during past three decades, the following factors are found to primarily contribute to elderly Okinawans' health: (1) genetics; (2) caloric restriction; (3) healthy cognitive aging, and (4) the role of physical activity. The OCS further explains why the three factors contribute to elderly Okinawans' health. First, because nearly a third of human lifespan may be heritable, Okinawan longevity is partially genetic. Second, eating fewer calories and the low caloric intake contributed to increases Okinawans' life span. Third, compared to other elderly populations in United States and elsewhere, the dementia rate is fairly low among the elderly Okinawans. Last, elderly Okinawans have an average body mass index (BMI) that ranged from 18 to 22 (lean is less than 23) and are keeping physically active. Therefore, the OCS concluded that Okinawans have the best combination including both genetic and non-genetic longevity advantages. In other words, the typical Okinawan's lifestyle, which includes healthy dietary habits, considerable physical activities, the psychological and social supports, plays important roles in Okinawan health and longevity. The OCS found that genetics, caloric restriction, and healthy cognitive aging contribute to elderly Okinawan's health. However, the OCS also concluded the particular physical activity interventions that impact healthy aging have not been determined. In fact, leisure activities as part of physical activity interventions are not even studied by the researchers to see how leisure contributes to Okinawan health and longevity.

To our knowledge, there is no research on Okinawan's leisure activities, leisure constraints and health. Therefore,

the purpose of this study is to explore leisure activities and the factors that constrain elderly Okinawans from attaining desired leisure activities and to examine how leisure activities and constraints impact elderly Okinawans' health. Research questions are as follows:

1. What are actual leisure activities and leisure constraints among elderly Okinawans?
2. What are the relationships between leisure activities, leisure constraints, health, and socio-demographic information among elderly Okinawans?

Method

Research site

As one of Japan's prefectures, Okinawa (Ryukyu Islands) is located in southern part of Japanese archipelago. It consists of 160 islands in a chain over 600 miles long. Among the 160 islands, the Okinawa Hontou (Main Island) has more than 90 % of population in Okinawa. In order to find a well-represented site among 41 administrative units organized by shi (city), cho (township), son (village) in the Ryukyu Islands, we only chose the Okinawa Hontou as our study island. In addition, we did not choose some places such as city of Naha and Ogimi village where are heavenly promoted by both Western and Eastern mass media in terms of tourism, leisure, longevity, and health. Recommended by local researchers, village of Kitanakagusuku (gusuku means castle in Japanese) was chosen as our data collection site. The village is located in the Okinawa Island which is a typical Okinawa's village with a population of nearly 17,000 (Kitanaka Village, 2015). Kitanakagusuku is an aging village with a total of 3,667 residents who are over 60 years old accounted for 23.3% of the population. Geographically, it is adjacent to urban areas (e.g., City of Naha) and rural areas (e.g., Ogimi village). It is perfectly a research site with a combination of urban and rural areas. Furthermore, the village is integrated part of the U.S army base because the villages residents work for the base and the villages provides housing for U.S army employees.

Sample

As a result, a total of 250 questionnaires are collected at the end of a two-week data collection period. Average age of the samples is 71.10 year old with 53.6 percent male participants.

Data Collection

Because son (village) is administered by aza (district), we randomly chose 5 of 13 districts as our data collection areas in the village. We first contacted department of Public Health of the village to get permits to conduct our research. Then, we asked a local leader from each selected district to contact randomly selected study participants. During our data collection period, we visited mayor of the village to make sure the village corporate our research.

Randomly selected village residents were invited to fill the questionnaire out in Koumin Kan (local community center). Because some of selected village residents were not able to come to Koumin Kan, we also visited their home to do the data collections. We did not use regular mail-in surveys because response rates of surveys have declined and refusals rates increased significantly in all public opinions surveys (Synodinos & Yamada, 2000). The questionnaire consisted of four parts: (1) leisure activities; (2) leisure constraints; (3) leisure satisfaction and health; and (4) socio-demographic information. Because there is not a leisure activities inventory in Japan, we used a leisure activities list which was based on our pilot studies in Tokyo and Osaka. In order to insure validity of the list, we first compared with the 2010 Whitepaper of Leisure of Japan published by the Japan Productivity Center since 1977 to see if any activities are needed to be added into the list. The white paper is reliable because it is:

"the only publication that covers the actual leisure activities in Japan in comprehensive and chronological way both

from the perspective of demand and supply sides. The paper is based on a survey of actual leisure activities of 3,000 people over age of 15" (Japan productive center, 2011).

In addition, the list was reviewed by local experts including university researchers, village leaders, and local government officers. As a result, the list was no change after the comparisons and reviews. Because there is also not a leisure constraints list in Japan, we also used our pilot studies on leisure constraints in Tokyo and Osaka. The leisure constraints list was again reviewed by the local experts to insure validity of the list. The surveys asked each sample to rate each item of leisure activities and constraints in terms of importance on a 1 – 5 Likert-type scale. For examples, if watching TV is on the list of activities, the samples are asked to rate the importance of watching TV from 1 (extremely unimportant) to 5 (extremely important). Similarly, if lack of money is on the list of constraints, the samples are asked to rate the importance of lack of money from 1 (extremely unimportant) to 5 (extremely important). At the same time, the survey asked each participant to rate each item of leisure activities in terms of participation frequency on a 1-5 Likert scale. For example, if watching TV is on the list of activities, the samples are asked to rate frequency of watching TV from 1 (nonparticipation) to 5(almost every day). Individuals' health is measured by using the Quality of Life constructed by the World Health Organization. The World Health Organization developed an international cross-culturally comparable quality of life assessment instrument called The World Health Organization Quality of Life (WHOQOL). The WHOQOL evaluates the individual's perceptions in the context of their culture and value systems, and their health concerns. The WHOQOL instrument has been widely tested in many countries. WHOQOL is measured using a 1–5 Likert-type scale to physical health, psychological health, social relationships, and environment. WHOQOL-BREF is a shorter version of the original instrument comprised 26 items including physical health, psychological health, social relationships, and environment ("WHO Quality of Life-BREF (WHOQOL-BREF)", n.d.). Finally, study participants were asked to report socio-demographic information including their gender, age, retirement status, level of education, annual income, numbers of family members, and marital status.

Data analysis

First, we used descriptive analysis to generate summaries of demographic differences among study participants. We presented mean of participation frequency and importance of 109 leisure activities, importance of 16 leisure constraints, leisure satisfaction, and 26 health variables. Instead of running factor analysis on leisure activities, leisure constraints, and health, we added scores of frequency of each leisure activity, importance of each leisure activity, importance of each leisure constraint, and each health variable. Therefore, we created four new variables for each case (study participant) that are sum of frequency of leisure activities, sum of importance of leisure activities, sum of importance of leisure constraints, and sum of health to represent overall leisure lifestyle and overall health. In order to explore relationship between leisure activities, leisure constraints, health, and socio-demographic information, we used the bivariate correlation in this study.

Results

The purpose of this study was to identify how leisure activities (both active and non-active) and leisure constraints impact elderly Okinawans' health with the goal being to reduce mental, physical, and psychological health problems. A total of 250 participants completed the survey in Kitanakagusuku. Table 1 showed socio-demographic information of study participants from the village. Average age of female participants was slightly older than male participants, but 82.2 % of participants were retired. Approximately 10 % of participants lived alone whereas nearly 90 % of participants lived with at least one person in their house. More than 50 % of participants had an annual household income of less

than 3,000,000 Yen. A total of 91.7% of the respondents are married, but less than one fourth participants had a college degree.

Table 2 and 3 showed ranking of participant frequency of leisure activities and ranking of importance of leisure activities. With regard to the participation frequency for leisure activities, only 9 of 109 leisure activities had a mean greater than 3 which indicated occasional participation. Reading newspaper, watching TV, bathing at hot springs,

Table1. Social demographic information of Kinanakagusugu

Social demographic of information		Number	Percent
Gender (n=250)	Male	134	53.6
	Female	116	46.4
Average age (n= 250)	Male	70.78	53.6
	Female	71.45	46.4
Number of household (n=250)	1	25	10
	2	97	38.8
	3	59	23.6
	4	35	14
	5	26	10.4
	6	8	3.2
Annual income (n=248)	Less than 3,000,000 Yen*	133	53.6
	3,000,000 – 5000000 Yen	70	28.2
	500,0000 – 750,0000 Yen	22	8.9
	7500,000 –1000,0000 Yen	9	3.6
	1000,0000 – 1200,0000 Yen	2	0.8
	12,000,000 – 1,500,0000 Yen	1	0.4
	1,500,0000 – 2,000.0000 Yen	4	1.6
	Over 2000,0000 Yen	1	0.4
	No income	6	2.4
Marital status(n=242)	Single	9	3.7
	Married	222	91.7
	Other	11	4.5
Education level	Middle school or less	74	30.1
	High school	102	41.5
	vocational school	10	4.1
	vocational high school	4	1.6
	2-3 year college	24	9.8
	4 years University	31	12.6
	Graduate school	1	0.4
(2013 currency exchange rate) Employment status (n=241)	Retired	198	82.2
	Not retired	43	17.8

*1USD=80Yen

listening to radio, meeting people, gardening, taking nap, cooking, playing with grandchildren and kids, and walking appear in the top 10 leisure activities of participation frequency. With regard to the importance for leisure activities, only 11 out of 109 leisure activities had a mean greater than 3 which indicated moderate important. Reading newspaper, watching TV, meeting people, bathing at hot springs, playing with grandchildren and kids, waking, listening to radio, gardening, taking nap, and cooking are listed in the top 10 leisure activities for importance. However, both reading newspaper and watching TV are listed in the top 2 activities for participation frequency and importance.

Table 2. Ranking of Participation frequency of leisure activities

Ranking	Leisure activities	N	Minimum	Maximum	Mean	Std. Deviation
1	Reading Newspaper	249	1	5	4.67	0.9
2	Watching TV	249	1	5	4.28	1.2
3	Hot spring	249	1	5	3.65	1.58
4	Radio	250	1	5	3.48	1.41
5	Meeting People	248	1	5	3.46	0.99
6	Gardening	250	1	5	3.38	1.14
7	Nap	247	1	5	3.3	1.33
8	Cooking	250	1	5	3.17	1.62
9	Playing with grandchildren and kids	248	1	5	3.08	1.39
10	Walking	249	1	5	2.95	1.3
11	Reading books	247	1	5	2.76	1.11
12	Dining-out	247	1	5	2.69	0.87
13	driving for fun	250	1	5	2.6	1.13
14	Reading magazines	249	1	5	2.59	1.04
15	Domestic travel	250	1	5	2.44	0.99
16	Chatting	250	1	5	2.44	1.32
17	Gymnastics	247	1	5	2.4	1.33
18	Volunteer activity	249	1	5	2.39	1.19
19	Go to local parks	250	1	5	2.33	1.15
20	Study	250	1	5	2.23	1.13
21	Singing, Karaoke	249	1	5	2.21	1.09
22	Watching video DVD	248	1	5	2.17	1.15
23	Do-it-yourself/housework	249	1	5	2.15	1.13
24	Coffeeshop	247	1	5	2.14	1.09
25	Pet	250	1	5	2.09	1.53
26	Party	247	1	5	1.99	1
27	Tavern, bar, or pub	250	1	4	1.95	1.04
28	Festival	249	1	4	1.95	0.94
29	Movie theater	246	1	5	1.94	1.08
30	Internet surfing	249	1	5	1.92	1.34
31	Music	249	1	5	1.91	1.14
32	Sports Spectating	250	1	5	1.9	1
33	Bowling	250	1	4	1.88	0.97
34	Concert	250	1	4	1.85	0.92
35	Massage	249	1	5	1.84	1.02
36	Other social activities	226	1	5	1.83	1.08
37	Gateball	250	1	5	1.82	1.28
38	picnicking	249	1	4	1.8	0.95
39	Workout	247	1	5	1.79	1.14
40	International travel	250	1	4	1.78	0.94
41	Emailing/texting	248	1	5	1.77	1.18
42	Other pleasure reading	239	1	5	1.76	0.96
43	Lottery , Soccer lottery	250	1	4	1.76	0.98
44	Other dining activities	232	1	4	1.72	0.94
45	Other hobbies	229	1	5	1.72	1.06
46	Other travel	229	1	4	1.67	0.9
47	Art appreciations through TV	250	1	5	1.64	0.94
48	Reading Manga	245	1	5	1.61	0.8
49	Golf	250	1	5	1.59	1.07
50	Playing instrument	249	1	5	1.59	1.02
51	Zoo	249	1	4	1.57	0.83
52	Kabuki viewing	250	1	4	1.56	0.86
53	Jogging or running	246	1	5	1.54	0.92
54	Visiting national parks or nature parks	247	1	4	1.53	0.85
55	Art appreciations not through TV	250	1	4	1.52	0.84
56	Dating	248	1	5	1.51	0.88
57	Weaving	250	1	4	1.5	0.93
58	Beach	249	1	5	1.5	0.85
59	Other outdoor activities	230	1	5	1.45	0.9
60	Other relaxation	227	1	5	1.45	0.88
61	Calligraphy	248	1	5	1.44	0.92
62	Hiking	249	1	4	1.42	0.74
63	Amusement park	249	1	3	1.41	0.7
64	Photographing	249	1	5	1.4	0.87
65	Swimming	248	1	5	1.38	0.81
66	Meditation	248	1	5	1.38	0.84
67	Other Sports	236	1	4	1.37	0.76
68	Other entertainments	223	1	5	1.36	0.8
69	Social dance	248	1	4	1.36	0.8
70	Card game	250	1	5	1.32	0.72
71	Camping	249	1	3	1.32	0.65
72	Artwork	249	1	5	1.31	0.73
73	Table Tennis	250	1	4	1.3	0.62
74	Playing go	249	1	5	1.26	0.73
75	Writing	250	1	4	1.26	0.66
76	Biking	250	1	4	1.24	0.64
77	Baseball	250	1	5	1.24	0.57
78	Religious activities	249	1	5	1.24	0.74
79	Flower arrangement	248	1	4	1.23	0.63
80	Softball	249	1	5	1.2	0.55
81	Fishing	250	1	4	1.2	0.57
82	Pottery	249	1	4	1.19	0.58
83	Volleyball	250	1	3	1.18	0.49
84	Mountain climbing	250	1	4	1.18	0.55
85	Badminton	250	1	5	1.17	0.56
86	Tea ceremony	250	1	5	1.17	0.57
87	Aerobics	248	1	3	1.12	0.37
88	Chess	248	1	5	1.12	0.46
89	Club disco	249	1	5	1.12	0.49
90	Tennis	250	1	3	1.11	0.37
91	Modelmaking	249	1	3	1.11	0.41
92	Martial art	250	1	4	1.1	0.4
93	Pachiko	248	1	4	1.09	0.39
94	Taichi	250	1	3	1.08	0.31
95	Video game	250	1	3	1.08	0.34
96	Ice-skating	250	1	3	1.07	0.28
97	Billiard	249	1	4	1.07	0.34
98	Soccer	250	1	3	1.06	0.28
99	Scubadiving	250	1	4	1.06	0.3
100	Motorboating	249	1	5	1.06	0.35
101	Arcade	250	1	3	1.05	0.25
102	Skiing	250	1	2	1.04	0.2
103	Majoh	250	1	3	1.04	0.21
104	Horserace gambling	250	1	4	1.04	0.25
105	Horse riding	250	1	2	1.03	0.17
106	Snowboarding	250	1	2	1.03	0.18
107	Autorace gambling	250	1	2	1.03	0.17
108	Surfing	250	1	2	1.02	0.15
109	Boatrace gambling	250	1	2	1.02	0.15

Table 3. Ranking of Importance of leisure activities

Ranking	Leisure activities	N	Minimum	Maximum	Mean	Std. Deviation
1	Reading Newspaper	248	1	5	4.37	0.97
2	Watching TV	246	1	5	3.88	1.16
3	Meeting People	244	1	5	3.76	1.06
4	Hot spring	244	1	5	3.7	1.47
5	Playing with grandchildren and kids	245	1	5	3.59	1.39
6	Walking	247	1	5	3.55	1.4
7	Radio	245	1	5	3.49	1.31
8	Gardening	247	1	5	3.46	1.14
9	Nap	242	1	5	3.46	1.29
10	Cooking	247	1	5	3.44	1.54
11	Reading books	248	1	5	3.18	1.27
12	Volunteer activity	243	1	5	2.91	1.4
13	Domestic travel	246	1	5	2.9	1.15
14	Gymnastics	246	1	5	2.82	1.5
15	Dining-out	245	1	5	2.8	1.03
16	Reading magazines	249	1	5	2.74	1.11
17	driving for fun	245	1	5	2.72	1.16
18	Study	243	1	5	2.67	1.32
19	Chatting	244	1	5	2.67	1.42
20	Do-it-yourself/housework	242	1	5	2.54	1.29
21	Go to local parks	245	1	5	2.51	1.14
22	Singing, Karaoke	245	1	5	2.48	1.24
23	International travel	244	1	5	2.42	1.27
24	Internet surfing	244	1	5	2.39	1.45
25	Party	244	1	5	2.39	1.28
26	Watching video DVD	245	1	5	2.36	1.2
27	Coffeeshop	245	1	5	2.35	1.17
28	Sports Spectating	247	1	5	2.32	1.18
29	Workout	245	1	5	2.31	1.41
30	Gateball	248	1	5	2.29	1.41
31	Pet	247	1	5	2.29	1.51
32	Concert	246	1	5	2.28	1.18
33	Other social activities	226	1	5	2.28	1.32
34	Massage	244	1	5	2.27	1.22
35	Festival	243	1	5	2.25	1.1
36	Music	247	1	5	2.22	1.28
37	Tavern, bar, or pub	248	1	5	2.14	1.16
38	picnicking	242	1	5	2.14	1.21
39	Bowling	249	1	5	2.12	1.09
40	Movie theater	243	1	5	2.12	1.16
41	Emailing/texting	244	1	5	2.12	1.33
42	Jogging or running	246	1	5	2.06	1.28
43	Playing instrument	244	1	5	2.05	1.26
44	Other hobbies	226	1	5	2.04	1.24
45	Other travel	229	1	5	2.03	1.15
46	Swimming	246	1	5	2.02	1.26
47	Beach	246	1	5	2.02	1.2
48	Art appreciations through TV	246	1	5	1.99	1.16
49	Visiting national parks or nature parks	243	1	5	1.97	1.16
50	Other pleasure reading	239	1	5	1.96	1.03
51	Calligraphy	245	1	5	1.96	1.26
52	Art appreciations not through TV	245	1	5	1.96	1.12
53	Kabuki viewing	247	1	5	1.96	1.09
54	Golf	249	1	5	1.94	1.2
55	Dating	242	1	5	1.94	1.21
56	Other dining activities	231	1	5	1.9	1.1
57	Weaving	242	1	5	1.88	1.17
58	Zoo	243	1	5	1.87	1.04
59	Social dance	245	1	5	1.86	1.17
60	Lottery , Soccer lottery	246	1	5	1.82	1
61	Hiking	242	1	5	1.81	1.03
62	Other relaxation	226	1	5	1.81	1.09
63	Reading Manga	244	1	5	1.78	0.9
64	Other outdoor activities	229	1	5	1.78	1.1
65	Other Sports	232	1	5	1.75	1.1
66	Amusement park	244	1	5	1.75	0.96
67	Artwork	242	1	5	1.74	1.06
68	Photographing	246	1	5	1.74	1.09
69	Table Tennis	249	1	5	1.73	0.99
70	Camping	243	1	5	1.72	0.98
71	Writing	246	1	5	1.71	1.08
72	Meditation	244	1	5	1.7	1.06
73	Playing go	243	1	5	1.64	1.06
74	Baseball	248	1	5	1.63	1.01
75	Softball	249	1	5	1.63	1.04
76	Flower arrangement	243	1	5	1.63	0.99
77	Pottery	244	1	5	1.62	1.03
78	Fishing	245	1	5	1.6	0.96
79	Tea ceremony	246	1	5	1.59	0.99
80	Biking	245	1	5	1.58	0.97
81	Badminton	244	1	5	1.58	0.98
82	Taichi	246	1	5	1.58	0.99
83	Mountain climbing	245	1	5	1.58	0.96
84	Volleyball	249	1	5	1.57	0.94
85	Martial art	246	1	5	1.57	0.97
86	Tennis	249	1	5	1.54	0.88
87	Religious activities	245	1	5	1.54	1.01
88	Other entertainments	223	1	5	1.53	0.94
89	Aerobics	247	1	5	1.51	0.91
90	Chess	242	1	5	1.47	0.87
91	Card game	246	1	5	1.47	0.88
92	Modelmaking	245	1	5	1.42	0.8
93	Soccer	249	1	5	1.41	0.79
94	Scubadiving	247	1	5	1.36	0.75
95	Ice-skating	249	1	5	1.35	0.73
96	Club disco	246	1	5	1.35	0.73
97	Skiing	247	1	5	1.33	0.76
98	Surfing	247	1	5	1.32	0.7
99	Horse riding	248	1	5	1.31	0.68
100	Motorboating	245	1	5	1.31	0.72
101	Snowboarding	248	1	5	1.29	0.68
102	Video game	245	1	5	1.29	0.66
103	Mah-jong	244	0	5	1.27	0.69
104	Billiard	244	1	5	1.24	0.6
105	Pachinko	243	1	5	1.23	0.62
106	Arcade	246	1	5	1.22	0.55
107	Horserace gambling	245	1	5	1.21	0.57
108	Autorace gambling	245	1	5	1.2	0.55
109	Boatrace gambling	244	1	5	1.17	0.52

Table 4 indicated importance of leisure constraints rated by the study participants. Mean of importance of money,

housework, family, and time were very close to 3 which meant moderate whereas rest of mean of importance of leisure constraints were below 3. Table 5 indicated mean of 26 health items adopted from WHOQOL. Based on the rating scores by the study participants, a total of 25 out of 26 health items had high mean over 3 on moderate.

Table 6 indicated correlations of leisure activities, leisure constraints, leisure satisfaction, health, and demographic variables. Sum of frequency of leisure activities and sum of importance of leisure activities strongly correlated ($r = .64$, $n = 250$, $p = .000$). On the other hand, sum of frequency of leisure activities was positively correlated with both sum of leisure constraints and sum of health ($r = .25$, $n = 250$, $p = .000$), although not very strongly. With respect to

Table 4. Importance of leisure constraints rated by study participants from Kitanakagusugu

	Leisure constraints	N	Minimum	Maximum	Mean	Std. Deviation
1	Money	248	1	5	3.36	1.46
2	Housework	248	1	5	3.04	1.39
3	Family	171	1	5	3.03	1.38
4	Time	250	1	5	3.01	1.19
5	Tiredness	249	1	5	2.92	1.13
6	Work	248	1	5	2.85	1.36
7	Busy	246	1	5	2.8	1.14
8	Can not move body well	248	1	5	2.77	1.4
9	Weather	246	1	5	2.76	1.31
10	Can not concentrate	249	1	5	2.71	1.26
11	Lack of motivations	248	1	5	2.62	1.2
12	Take care of others	247	1	5	2.57	1.46
13	Do not know how to use time	247	1	5	2.52	1.07
14	Study	248	1	5	2.45	1.23
15	Do not have regular vocation time	244	1	5	2.33	1.29
16	Part-time j ob	172	1	5	1.69	0.93

Table 5. Health measurements on physical health, psychological health, social relationships, and environment

		N	Minimum	Maximum	Mean	Std. Deviation
1	How well are you able to get around?	247	1	5	4.56	0.71
2	Do you have enough energy for everyday life?	245	2	5	4.16	0.65
3	To what extent do you feel your life to be meaningful?	245	1	5	4.07	0.81
4	How safe do you feel in your daily life?	246	1	5	4.02	0.69
5	How healthy is your physical environment?	247	1	5	4	0.76
6	To what extent do you have the opportunity for leisure activities?	247	1	5	3.98	0.8
7	How much do you enjoy life?	248	2	5	3.96	0.7
8	How satisfied are you with the conditions of your living place?	246	1	5	3.93	0.78
9	How well are you able to concentrate?	248	2	5	3.92	0.74
10	How available to you is the information that you need in your day-to-day life?	247	1	5	3.92	0.74
11	How satisfied are you with the support you get from your friends?	248	1	5	3.82	0.73
12	How satisfied are you with your sleep?	248	1	5	3.81	0.95
13	How satisfied are you with your personal relationships?	248	1	5	3.79	0.77
14	Are you able to accept your bodily appearance?	246	1	5	3.76	0.84
15	Have you enough money to meet your needs?	246	1	5	3.7	0.93
16	How satisfied are you with your ability to perform your daily living activities?	248	1	5	3.7	0.89
17	How satisfied are you with your capacity for work?	248	1	5	3.68	0.91
18	How would you rate your quality of life?	248	1	5	3.65	0.8
19	To what extent do you feel that physical pain prevents you from doing what you need to do?	248	1	5	3.63	1.28
20	How satisfied are you with yourself?	248	1	5	3.62	0.89
21	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	248	1	5	3.6	1.06
22	How satisfied are you with your access to health services?	247	1	5	3.53	0.79
23	How satisfied are you with your health?	247	1	5	3.43	0.98
24	How satisfied are you with your transport?	245	1	5	3.36	1
25	How satisfied are you with your sex life?	243	1	5	3.17	0.82
26	How much do you need any medical treatment to function in your daily life?	247	1	5	2.92	1.44

relationships between sum of frequency of leisure activities and demographic variables, sum of frequency of leisure activities was negatively related to age. This means leisure activities were more frequently participated for those who are younger. Sum of frequency of leisure activities was positively correlated to education level and working status (where 0 = retired and 1 = non-retired) meaning that those who were more educated and who were non-retired participated in more leisure activities. Sum of importance of leisure activities was related to sum of leisure constraints ($r = .39$, $n = 250$, $p = .000$) and sum of health ($r = .20$, $n = 250$, $p = .000$), although is not very strongly related, however. This means leisure activities were more important for those who are more constrained and also felt that their health was better. Similar to sum of frequency of leisure activities, both sum of importance of leisure activities and leisure constraints were negatively correlated with age but positively were related to education level. The relationships between sum of health and the demographic variables and relationships between leisure satisfaction ($M=3.70\pm0.88$) and the demographic variables were surprising because neither sum of health nor leisure satisfaction appear to be related to any of the demographic variables.

Table 6. Correlations of leisure activities, leisure constraints, leisure satisfaction, and health and socio-demographic information

		Sum of Frequency of leisure activities	Sum of importance of leisure activities	Sum of importance Constraints	Sum of Health	Leisure Satisfaction	Gender	Age	Number of Household	Annual Income	Marital Status	Education Level	Retirement
Sum of Frequency of leisure activities	r	1	0.64*	0.25*	0.25*	0.11	-0.07	-0.26*	-0.03	-0.06	0.01	0.31*	0.16*
	P		0	0	0	0.07	0.25	0	0.63	0.32	0.92	0	0.01
	N	250	250	250	250	247	250	250	250	248	244	247	241
Sum of importance of leisure activities	r	0.64*	1	0.39*	0.20*	0.03	-0.09	-0.16*	-0.01	-0.1	-0.01	0.24*	0.1
	P	0		0	0	0.64	0.17	0.01	0.87	0.13	0.93	0	0.12
	N	250	250	250	250	247	250	250	250	248	244	247	241
Sum of importance Constraints	r	0.25*	0.39*	1	0.055	0	0.02	-0.26*	0.01	0.06	-0.09	0.15*	0.12
	P	0	0		0.386	0.98	0.73	0	0.88	0.36	0.18	0.02	0.07
	N	250	250	250	250	247	250	250	250	248	244	247	241
Sum of Health	r	0.25*	0.20*	0.06	1	0.67*	-0.05	-0.09	-0.01	0	-0.04	0.09	0.03
	P	0	0	0.39		0	0.44	0.15	0.83	0.94	0.56	0.15	0.62
	N	250	250	250	250	247	250	250	250	248	244	247	241
Leisure Satisfaction	r	0.11	0.03	0	0.67*	1	0.01	0.08	-0.02	0.1	0.05	0.03	-0.12
	P	0.07	0.64	0.98	0		0.9	0.19	0.72	0.11	0.48	0.63	0.06
	N	247	247	247	247	247	247	247	247	245	243	244	238
Gender	r	-0.07	-0.09	0.02	-0.05	0.01	1	0.05	-0.09	0.01	-0.02	-0.17*	-0.14*
	P	0.25	0.17	0.73	0.44	0.9		0.46	0.17	0.82	0.79	0.01	0.04
	N	250	250	250	250	247	250	250	250	248	244	247	241
Age	r	-0.26*	-0.16*	-0.26*	-0.09	0.08	0.05	1	-0.12*	-0.06	0.08	-0.27*	-0.31*
	P	0	0.01	0	0.15	0.19	0.46		0.05	0.32	0.21	0	0
	N	250	250	250	250	247	250	250	250	248	244	247	241
Number of Household	r	-0.03	-0.01	0.01	-0.01	-0.02	-0.09	-0.12*	1	-0.03	0.03	-0.01	0.07
	P	0.63	0.87	0.88	0.83	0.72	0.17	0.05		0.62	0.66	0.83	0.29
	N	250	250	250	250	247	250	250	250	248	244	247	241
Annual Income	r	-0.06	-0.1	0.06	0	0.1	0.01	-0.06	-0.03	1	0.02	0.08	0.07
	P	0.32	0.13	0.36	0.94	0.11	0.82	0.32	0.62		0.74	0.19	0.28
	N	248	248	248	248	245	248	248	248	248	242	245	239
Marital Status	r	0.01	-0.01	-0.09	-0.04	0.05	-0.02	0.08	0.03	0.02	1	-0.05	0.11
	P	0.92	0.93	0.18	0.56	0.48	0.79	0.21	0.66	0.74		0.45	0.08
	N	244	244	244	244	243	244	244	244	242	244	241	235
Education Level	r	0.31	0.24	0.15	0.09	0.03	-0.17	-0.27	-0.01	0.08	-0.05	1	0.13
	P	0	0	0.02	0.15	0.63	0.01	0	0.83	0.19	0.45		0.05
	N	247	247	247	247	244	247	247	247	245	241	247	238
Retirement	r	0.16	0.1	0.12	0.03	-0.12	-0.14	-0.31	0.07	0.07	0.11	0.13	1
	P	0.01	0.12	0.07	0.62	0.06	0.04	0	0.29	0.28	0.08	0.05	
	N	241	241	241	241	238	241	241	241	239	235	238	241

*p<0.05

Discussion

This study is the first comprehensive study that operationalized leisure lifestyle as leisure activities and leisure constraints, and leisure satisfaction in leisure studies in a cross-cultural setting. It will impact leisure theory, epidemiological theory, and research methods.

Although previous research has documented that active leisure (e.g., exercise, park use) positively influence

people's health (Lee and Paffenbarger, 2000; Orsega-Smith, Mowen, Payne and Godbey, 2004; Shores and West, 2006; Floyd, Spengler, Madddock, Gobster, Suau, 2008) and passive leisure can contribute to coping with stress by promoting post-traumatic growth and self –restoration (Iwasaki,2000; Kleiber, 1999; Mannell,2007), there is no research on how a combination of both active and passive leisure impact on either physical or psychological health. This study filled the gap by providing evidence that leisure lifestyle (both active and passive leisure) showed a positive impact on physical and psychological health.

This study confirmed that leisure lifestyle (leisure activities and leisure constraints) impacts physical and mental health. We regard leisure lifestyle has positive outcomes that improve well-being, happiness, and reduce stress. In addition, SES has no impact on health, however, only age and education level were moderately related to leisure lifestyle including leisure activities and leisure constraints. The study contributes to our understandings of the relationship between leisure lifestyle, health and SES cross-culturally.

This study has two practical implications. From a scientific perspective, no such research has been conducted in Okinawa, Japan, and the results of this study provides a wealth of cross-cultural data on older people's leisure and health. From an applied perspective, government agencies, leisure services, and gerontology centers can utilize these findings to reproduce this research for the benefit of other scientific and health-related endeavors.

With respect to future research, comparative studies among different villages and different age groups in Okinawa are needed. In this study, because we particular did not study unique leisure lifestyles (e.g., family gatherings including feasting and ceremonies honoring ancestors), future research will explore how these activities influence mental, physical, and psychological health in Okinawa. We also concur Cockerham and Yamori's suggestion that future research should conduct comparative research between Okinawa and mainland Japan because mainland Japan is different from Okinawa in terms of lifestyles.

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