Healthcare Access and Subjective Well-being at High Altitudes: Evidence from Tibet, China

Chaofan Li, Xiaoyan Wu, Yongzhu Lacuo, Liyong Lu, Gang Chen, Zhaxi Dawa, Shunping Li

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Chaofan Li[1] PhD; Xiaoyan Wu[2] MD; Yongzhu Lacuo[3] MD; Liyong Lu[1] PhD; Gang Chen[4] PhD; Zhaxi Dawa[5] PhD; Shunping Li[1] PhD

[1]Centre for Health Management and Policy Research, School of Public Health, Cheeloo College of Medicine Shandong University, Jinan Jinan CN
[2]Jiujiang Center for Disease Control and Prevention jiujiang CN
[3]School of Sociology and Social Policy University of Leeds West Yorkshire GB
[4]Centre for Health Economics,Monash Business School Monash University Melbourne AU
[5]Medical College of Tibet University Lhasa CN

Corresponding Author:
Xiaoyan Wu MD
Jiujiang Center for Disease Control and Prevention
Jiujiang, 332000?China
jiujiang
CN

Abstract

Background: Achieving universal access to healthcare is a specific target of Sustainable Development Goals 3 which seeks to promote health and well-being for all. However, the SWB in Tibet and its relationship with healthcare access are inadequately understood.

Objective: This study aims to assess the magnitude of subjective well-being (SWB) and examine the its relationship with healthcare access in Tibet, China.

Methods: Data was obtained from the 2018 Sixth National Health Service Survey in Tibet. The SWB was measured using a revised version of Personal Well-Being Index (PWI), and healthcare access was assessed using geographical accessibility, affordability, and availability. Descriptive statistics were used to summary the basic characteristic of respondents. After controlling for sex, age, marital status, occupation, education, household income per capita and chronic disease, multiple regression model was used to examine the relationship between SWB and healthcare access.

Results: The PWI score among the 2113 respondents in 2018 was 69.04 (SD=14.97) and the overall life satisfaction was 7.00 (SD=2.04). After adjusting for control variables, the residents with good geographical accessibility reported higher SWB (?= 2.90, 95% CI: 1.32–4.47). Basic and supplementary health insurance coverage showed no significant association with SWB. Regarding availability, the number of physicians per 1,000 populations was significantly positively correlated with SWB (?=2.38, 95% CI: 1.00–3.76).

Conclusions: The SWB in Tibet fell in normative range of China and good healthcare access could promote SWB. Future research should delve into potential mechanisms between access to healthcare and SWB.

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ABSTRACT

Objective: Achieving universal access to healthcare is a specific target of Sustainable Development Goals 3 which seeks to promote health and well-being for all. However, the SWB in Tibet and its relationship with healthcare access are inadequately understood. This study aims to assess the magnitude of subjective well-being (SWB) and examine the its relationship with healthcare access in Tibet, China.

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Results: The PWI score among the 2113 respondents in 2018 was 69.04 (SD=14.97) and the overall life satisfaction was 7.00 (SD=2.04). After adjusting for control variables, the residents with good geographical accessibility reported higher SWB (β= 2.90, 95% CI: 1.32–4.47). Basic and supplementary health insurance coverage showed no significant association with SWB. Regarding availability, the number of physicians per 1,000 populations was significantly positively correlated with SWB (β=2.38, 95% CI: 1.00–3.76).

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Keywords: subjective well-being, healthcare access, Tibet, high-altitude area, universal health coverage

1 Introduction

Subjective well-being (SWB) is gaining increasing attentions from both scholars and policy makers [1]. It is increasing advocated as an important criterion for evaluating of public policy and healthcare programs [2, 3]. Goal 3 of Sustainable Development Goals (SDGs) set by United Nations in 2015 calls all countries to take actions to “ensure healthy lives and promote well-being for all at all ages” [4]. This goal included 13 concrete targets, such as crucial targe 3, “achieving universal health coverage (UHC), including financial risk protection and access to quality healthcare without financial risk for all.” Progress toward achieving the SDGs, as reported by De Neve, had made an enormous contribution to promoting human well-being [5]. Specially, health is a critical factor driving SWB globally and regionally [5-7].

However, regional disparities still pose a challenge to achieving UHC and improving SWB for all [8]. Moreover, recent research emphasizes the significance of measuring well-being at the regional level to guide policy decisions tailored to the specific needs of residents, highlighting important differences in well-being status across different regions [9, 10]. The OECD also advocates for regional well-being assessments to inform policy prioritization based on localized factors [11].

The Tibet, an autonomous region in southwest of China, is the largest and highest plateau region globally, with an average elevation higher than 4,000 meters. The natural environment in Tibet is challenging, marked by low atmospheric oxygen pressure, harsh cold weather, and limited resource [12]. The harsh nature environment has historically constrained social and economic rapid development in Tibet, and impaired the residents’ health, such as a high prevalence of chronic mountain sickness and Kaschin-Beck disease [13]. According to satisfaction of goals theories, SWB is determined by the extent that populations’ needs, desires and goals are satisfied [14]. Residents at high altitude area faced harsh nature experiments and had various basic needs, for example, shelter, food, health and education. The SWB of Tibetan is tightly related with the extent of fulfillment of their basic needs. To evaluate the magnitude of SWB in Tibet and examine its determinants at the regional level will be of significant importance to identify the specific needs of residents and make tailored policy.

During past years, the Chinese government has invested significant funds to improve living conditions, transportation, education, especially health system to enhance the well-being of Tibet's residents[15]. These investments have yielded improvements in population health and universal access to essential health services in Tibet. The life expectancy of residents in Tibet has risen from 35.5 years in 1951 to 72.2 years in 2021, while maternal and infant mortality rates have declined to 48 per 100,000 and 7.6 per 1,000, respectively [16]. The universal health coverage index, an indicator tracking progress toward UHC, has increased from 45 in 2003 to 65 in 2018, signifying advancements in healthcare access and financial protection [8]. Notably, the density of physicians, nurses, and ward beds reached 2.90, 2.13 and 5.37 per 1,000 in 2021, respectively. The household out-of-pocket payments (OOP) accounted for 7.16% of total health expenditure in 2020, much lower than the national level (27.65%) [17].

Despite Tibet's considerable achievements in improving health status and universal access to healthcare, limited research has been conducted on the status of SWB among Tibetans. Existing studies on SWB in China often draw samples from provinces with larger populations, neglecting the unique characteristics of Tibet's population [9, 18-21]. Webb investigated the SWB among ethnic Tibetans with a small sample (n=102) in Yushu, Qinghai province, and Chen

examined relationship between SWB and living arrangements among the elderly Tibetans in Gannan, Gansu province[22, 23]. However, both two studies were not conducted in Tibet.

This study aims to fill this gap by investigating the SWB status in Tibet, considering the region's harsh environment and limited health resources. Moreover, it seeks to examine the relationship between SWB and healthcare access, providing valuable insights into the intersection of health and well-being.

2 Methods

2.1 Data Source

This cross-sectional data was obtained from the sixth wave of National Health Service Surveys (NHSS) conducted in 2018 in Tibet, China. The NHSS is a national representative survey conducted every 5 years since 1993 across mainland China. Its comprehensive questionnaire covers various domains, including household characteristics, demographic and socioeconomic status, health status, healthcare access and utilization, medical expenditure, and enrollment in health insurance schemes. The survey employs a multi-stage stratified random sampling method, ensuring representation at the national level. All members of the selected households are included in the questionnaire survey. Previous studies provide detailed information on the four sampling stages of the NHSS [24]. For this study, a subset of 2292 residents were randomly selected to complete SWB questionnaire. After excluding 28 observations from individuals under 18 years old, 57 non-Tibetan respondents, and 94 cases with missing or erroneous values in key variables, the final sample included 2,113 residents. This rigorous selection process aimed to ensure data integrity and the inclusion of a representative sample for analysis.

2.2 Measurement on SWB

The assessment of SWB in this study employed the globally recognized and cross-culturally valid questionnaire known as the Personal Well-being Index (PWI). Developed by Cummins in 2001, the PWI has undergone translations into more than 20 languages, attesting to its widespread applicability [25]. Comprising eight items, the PWI encompasses one item gauging satisfaction with life, and seven items evaluating satisfaction across various domains of personal life. These domains include standard of living, health, achievements in life, personal relationships, personal safety, community connectedness, and future security. Participants provided responses on a Likert scale indicating the degree of satisfaction, ranging from 0 to 10 for each item. The PWI score, indicative of satisfaction with different aspects of personal life, was then standardized into the Percentage of Scale Maximum (%SM), with values ranging from 0 to 100 [26]. The reliability and validity of the Chinese-translated version of PWI, performed by Xing, have been established [31]. Furthermore, Webb's study affirmed the reliability and validity of PWI specifically among the Tibetan population [23].

It is noteworthy that, for the purpose of this survey, the item related to the personal safety was excluded based on two considerations: first, we posited that there was no discernible connection between healthcare access and satisfaction with safety; second, prior research indicated a weak association between feelings of safety and SWB and satisfaction on life as a whole [0, 33] . As Shu hypothesized, there was potential relationship between healthcare access and satisfaction on overall life and domains of life, such as personal life, interpersonal life and public life [29]. Thus, the questionnaire for SWB in this survey incorporated one item assessing overall life satisfaction and six life domain items. Refer to Appendix Table 1 for a display of the PWI items, while the results section provides details on the reliability and validity assessments.

2.3 Access to healthcare

This study comprehensively assessed access to basic healthcare across three pivotal dimensions: spatial accessibility, availability, and affordability. Geographical accessibility was gauged by travel time and distance from the patient's location to the nearest health facility, a widely acknowledged metric in healthcare accessibility research [30]. Respondents were asked, "How long does it take from your home to the nearest health facility by the fastest way?" The answers were categorized into two groups: 0) >10 minutes and 1) ≤10 minutes.

Availability of healthcare resources was measured using the density of physicians per 1,000 population at the city level, as reported in the Statistical Yearbook of Tibet in 2019 [31]. This metric aligns with established practices in assessing healthcare availability [32].

Healthcare affordability, a critical aspect of access, pertains to the ability to pay for necessary healthcare without encountering impoverishment or catastrophic spending [33, 34]. Affordability is influenced by both population characteristics and health system characteristics, such as health insurance coverage [35]. In this study, healthcare affordability was operationalized using basic and supplementary health insurance coverage.

2.4 Control variables

To address potential confounding effects, control variables associated with both access to basic healthcare and SWB were incorporated into the model. Prior empirical studies and SWB reviews have identified demographics, education, marital status, occupation, economic status, and health status as influential factors for SWB [2, 14, 18, 27, 36-38]. Consequently, these factors were included as control variables. Demographic variables comprised sex and age (continuous variable in years). Education was categorized into four levels: illiterate, primary school, middle school, and high school. Marital status was classified into three categories: unmarried, married, and divorced, widowed, or other. Occupation included five groups: unemployed, employed, farmer, self-employed, and other. Economic status was gauged by household income per capita (Chinese Yuan, RMB). Health status was assessed by the presence of a chronic disease rather than self-rated health status. Chronic disease was determined by the question, "Has any chronic disease been diagnosed by a physician in the past six months, such as hypertension, diabetes, or other chronic illnesses?" Respondents' answers were dichotomized into 0 for "No" and 1 for "Yes."

2.5 Statistical analysis

Data were presented as frequency and percentage for categorical variables and mean with standard deviation (SD) for continuous variables. Differences in SWB across binary variables were examined using the T-test, and one-way analysis of variance (ANOVA) was employed to assess differences in SWB across multiple categorical variables. Variance inflation factors (VIF) were utilized to detect multicollinearity among independent variables. To account for correlations between observations from the same household, cluster-robust standard errors were applied. Significance was defined as a two-sided *P* value < 0.05. All statistical analyses were conducted using Stata (version 15.0).

3 Results

Table 1 provides an overview of the basic characteristics of the 2113 respondents. More than half were female (54.80%), with an average age of 45.96±14.15 years. Illiterate individuals constituted the majority (57.03%), and over 80% were married. The majority were engaged in farming or grazing (60%), with a per capita household income of 17.17±28.37 thousand yuan (RMB). Urban residents comprised 21.53%, while the majority (78.47%) resided in rural areas. Additionally, 55.37% of respondents were diagnosed with chronic diseases.

Table 1. Basic characteristics of respondents and the descriptive statistics of personal well-being index across categorical variables

Variables	Categories	Total, *N* (%)	PWI (Mean ± SD)	*F/t*	*P*
Total sample		2113 (100.00)	69.04 (14.97)		
Sex					
	Male	955 (45.20)	69.62 (14.77)	2.62	0.11
	Female	1158 (54.80)	68.57 (15.13)		
Age (years), Mean (SD)		45.96 (14.15)	NA	NA	NA
Education					
	Illiterate	1205 (57.03)	67.72 (15.18)	15.11	<0.001
	Primary school	676 (31.99)	69.48 (14.55)		
	Middle school	147 (6.96)	73.57 (13.70)		
	High school	85 (4.02)	76.49 (13.73)		
Marital status					
	Unmarried	173 (8.19)	69.65 (16.04)	4.98	0.007
	Married	1695 (80.22)	69.39 (14.79)		
	Divorced, widowed and other	245 (11.59)	66.22 (15.21)		
Occupation					
	Unemployed	303 (14.34)	66.17 (16.37)	6.90	<0.001
	Employed	83 (3.93)	74.54 (15.14)		
	Farmer	1271 (60.15)	69.44 (14.27)		
	Self-employed	116 (5.49)	71.26 (14.75)		
	Other	340 (16.09)	68.04 (15.75)		
Household income per capita (1000 RMB), mean (SD)		17.17 (28.37)	NA	NA	NA
Region of residence					
	Rural	1658 (78.47)	68.67 (14.95)	4.71	0.03
	Urban	455 (21.53)	70.39 (15.01)		
Chronic disease					
	No	943 (44.63)	71.68 (14.87)	54.22	<0.001
	Yes	1170 (55.37)	66.92 (14.72)		
Geographical accessibility	>10 minutes	703 (33.27)	66.62 (14.16)	28.04	<0.001
	≤10 minutes	1410 (66.73)	70.25 (15.23)		
Basic health insurance					
	No	14 (0.66)	66.55 (12.93)	0.39	0.53
	Yes	2099 (99.34)	69.06 (14.99)		
Supplementary health insurance					
	No	579 (27.40)	67.88 (13.96)	4.79	0.03
	Yes	1534 (72.60)	69.48 (15.32)		

SD, standard deviation; NA, not applicable.

In terms of healthcare access, around 67% could reach the nearest health facility within 10 minutes. The Tibet

achieved universal health insurance coverage in 2018. Basic health insurance covered 99.34% of respondents, and supplementary health insurance covered 72.60%. The availability of healthcare, as shown in Table 2, varied greatly across regions. The density of ward bed ranged from 3.95 to 7.66 per 1000 populations. The distribution of health workforce was similar with ward beds. The health professionals per 1,000 population in Tibet was 5.5 (3.7–8.9), and physicians per 1,000 population was 2.4 (1.7–4.1).

Table 2. Availability of healthcare in 2018 in Tibet, China

Region	Ward beds per 1000 population	Health professionals per 1000 population	Physicians per 1000 population
Tibet	4.88	5.5	2.4
Lhasa	5.67	8.9	4.1
Xigaze	4.32	4.0	1.9
Qamdo	4.25	4.3	1.3
Nyingchi	7.31	7.9	3.7
Lhoka	3.95	5.6	2.8
Nagqu	4.54	3.7	1.7
Ngari	7.66	6.9	2.4

Table 3 illustrates the reliability and validity of the PWI. The Cronbach's α of PWI was 0.81, and the α values of the six items ranged from 0.75 to 0.80. For validity, the Pearson's correlation coefficient between each item and "Satisfaction with life as a whole" was significantly positive at the 0.001 level, ranging from 0.31 to 0.73. The factor loading of each item ranged from 0.64 to 0.81, explaining 51.27% of the variance.

Table 3. Reliability and validity of revised version of personal well-being index

Item	Mean (SD)	Cronbach's α	Factor loading	Correlation with "Life as a whole"
Life as a whole	7.00 (2.04)	NA	NA	NA
Standard of living	6.59 (2.13)	0.77	0.74	0.73***
Health	6.39 (2.15)	0.78	0.68	0.48***
Achieving in life	6.63 (2.02)	0.75	0.81	0.54***
Personal relationships	8.11 (1.85)	0.79	0.65	0.46***
Community connectedness	6.88 (2.34)	0.80	0.64	0.31***
Future security	6.82 (2.10)	0.76	0.76	0.52***
Personal well-being index	69.04 (14.97)	0.81	NA	NA
Percentage of variance accounted for			51.27%	
Kaisen-Meyer-Oklin value			0.84	
Bartlett's test of sphericity			*P*<0.001	

***, *P*<0.001; NA, not applicable.

Descriptive statistics and univariate analysis of PWI scores are reported in Table 1. The PWI score for all sampled respondents was 69.04 (SD=14.97). Univariate analysis revealed no significant gender difference in PWI, while significant differences in PWI were observed across educational levels, marital status, occupation, and region of residence at the 0.05 level. Additionally, healthy respondents had slightly higher PWI scores (71.68) than those diagnosed with chronic diseases (66.92), a significant difference at the 0.001 level. Respondents within a 10-minute travel time to the nearest health facility reported higher PWI scores (70.25) than those with travel times exceeding 10 minutes (66.62). Similarly, respondents with supplementary health insurance coverage reported higher PWI scores (69.48) than those without (67.88).

Table 4 presents the results of the multiple regression model. After controlling for sex, age, education, marital

status, occupation, income, chronic disease, and region of residence, accessibility and availability were significantly positively associated with SWB. Respondents who could reach a health facility within 10 minutes scored 2.90 points higher on PWI (95% CI: 1.32–4.47) than the reference group. Furthermore, the density of physicians per 1,000 population was also significantly positively associated with SWB (β=2.38, 95% CI: 1.00–3.76). However, no significant relationship was found between SWB and basic health insurance coverage (β=2.02, 95% CI: -4.69–8.72) or supplementary health insurance (β=0.32, 95% CI: -1.42–2.06).

Table 4. Association between access to healthcare and subjective well-being among the Tibetan, China (*N*=2113)

Variables	Coefficient	Robust standard error	95% confidence interval		*P*
Geographical accessibility: ref. >10 min					
≤10 minutes	2.90	0.80	1.32	4.47	<0.001
Basic health insurance: ref.=No					
Yes	2.02	3.42	-4.69	8.72	0.556
Supplementary health insurance: ref.=No					
Yes	0.32	0.89	-1.42	2.06	0.717
Physicians per 1,000 population	2.38	0.70	1.00	3.76	0.001
Chronic disease: ref.=No					
Yes	-3.30	0.71	-4.69	-1.91	<0.001
Sex: ref.=male					
Female	-0.31	0.61	-1.50	0.89	0.614
Age	-0.11	0.03	-0.17	-0.05	0.001
Marital status: ref.=unmarried					
Married	1.31	1.35	-1.33	3.96	0.330
Divorced, widowed and other	0.35	1.74	-3.06	3.76	0.839
Education: ref.=illiterate					
Primary school	0.78	0.73	-0.65	2.20	0.284
Middle school	3.00	1.32	0.41	5.58	0.023
High school	3.63	1.79	0.11	7.15	0.043
Occupation: ref.=unemployed					
Employed	1.52	2.01	-2.43	5.47	0.451
Farmer	0.94	1.14	-1.30	3.17	0.413
Self-employed	-0.43	1.85	-4.07	3.20	0.815
Other	-0.69	1.50	-3.64	2.25	0.645
Household income per capita	0.05	0.02	0.02	0.08	0.001
Region of residence: ref. Rural					
Urban	0.38	0.98	-1.55	2.30	0.702
Constant	63.96	4.14	55.83	72.08	<0.001

Table 5 reports the association between healthcare access and six life domains after controlling for multiple covariates. Compared to the reference group, respondents with good geographical accessibility reported higher satisfaction with standard of living (β=0.35), personal relationships (β=0.29), community connectedness (β=0.50), and future security (β=0.40), all significant at the 0.01 level. Respondents enrolling in basic health insurance evaluated higher satisfaction with the standard of living (β=1.65, *P*<0.05) but lower satisfaction with personal relationships (β=-1.19, *P*<0.001) compared to those without basic health insurance coverage. Respondents with supplementary health insurance coverage reported higher satisfaction with community connectedness (β=0.39, *P*<0.01) than the reference group. Regarding the availability of healthcare, the density of physicians was significantly positively correlated with satisfaction

with achievement (β=0.27, *P*<0.01), personal relationships (β=0.42, *P*<0.001), community connectedness (β=0.24, *P*<0.01), and future security (β=0.36, *P*<0.001).

Table 5. Association between access to healthcare and items of subjective well-being among the Tibetan, China (*N*=2113)

Variables	Standard of living	Health	Achievement	Personal relationships	Community connectedness	Future security
Geographical accessibility: ref. >10 min						
≤10 minutes	0.35**	0.03	0.18	0.29**	0.50***	0.40***
Basic health insurance: ref.=No						
Yes	1.65*	-0.22	0.69	-1.19***	0.44	-0.16
Supplementary health insurance: ref.=No						
Yes	-0.03	0.10	-0.08	-0.06	0.39**	-0.13
Physicians per 1,000 population	0.16	-0.02	0.27**	0.42***	0.24**	0.36***
Chronic disease: ref.=No						
Yes	-0.28**	-0.86***	-0.32***	-0.07	-0.10	-0.35***
Sex: ref.=male						
Female	0.05	-0.21*	-0.02	0.15	-0.01	-0.14
Age	-0.002	-0.02***	-0.01***	0.0008	-0.02***	-0.01*
Marital status: ref.=unmarried						
Married	0.20	-0.03	0.18	0.04	0.15	0.23
Divorced, widowed and other	-0.06	-0.04	-0.005	0.30	0.18	-0.17
Education: ref.=illiterate						
Primary school	0.21*	-0.04	0.10	0.01	0.01	0.18
Middle school	0.17	0.45*	0.19	0.29	0.26	0.44*
High school	0.67**	0.38	0.19	0.21	0.23	0.49
Occupation: ref.=unemployed						
Employed	0.43	0.65*	0.17	-0.35	0.16	-0.15
Farmer	0.02	0.39*	0.15	0.09	-0.09	0.01
Self-employed	-0.39	0.02	0.12	0.11	0.26	-0.38
Other	0.001	0.05	-0.16	-0.46*	0.12	0.03
Household income per capita	0.01***	0.004**	0.01***	0.004*	0.002	0.01*
Region of residence: ref. Rural						
Urban	-0.23	0.06	0.09	0.15	0.20	-0.06
Constant	4.22***	7.64***	5.80***	8.07***	6.21***	6.44***

*, *P*<0.05; **, *P*<0.01; ***, *P*<0.001

4 Discussion

4.1 Summary of findings

To improve well-being among the Tibetans living in high altitude region, this cross-sectional study assessed the magnitude of SWB using PWI and examined its relationship with access to healthcare. The study found a high PWI score of 69.04 in 2018, positively correlated with accessibility and availability of healthcare. These results underscored the importance of universal healthcare access as a significant contributor to well-being. The findings not only emphasized the need for monitoring healthcare access and SWB in Tibet for progress toward Sustainable Development Goals (SDGs) but

also provided valuable policy implications for other regions facing challenging environments and poor living conditions to enhance residents' well-being.

4.2 Magnitude of SWB in Tibet

The observed PWI score among Tibetans in 2018 was 69.04. However, the score was incomparable with other studies, because safety domain was excluded. The overall life satisfaction in this study (7.00) was a litter higher than Webb's finding (6.73) in 2009 [23]. The Tibetans also reported higher satisfaction on all domains of life than the urban citizens did [39]. The high level of life satisfaction among Tibetans in harsh circumstances could be attributed to improved living conditions, meeting basic physiological and health needs. The satisfaction of goals theory suggests that people's satisfaction with life correlates with the fulfillment of basic needs and achievement of goals [14]. Despite the challenging natural environment, Tibetans expressed satisfaction with improved living standards, education, work, economy, healthcare, social security, and the environment over the past decades [16]. Additionally, the influence of Buddhism on well-being was evident, with studies showing a positive association between Buddhist faith and SWB among Tibetans [22, 23].

4.3 Accessibility and availability of healthcare and SWB

The study revealed that good access to healthcare significantly facilitated SWB. Geographical accessibility, affordability, and availability were all positively associated with SWB among Tibetans, aligning with prior research indicating a positive relationship between the number of hospitals and SWB in China [9, 40]. This underscores the importance of enhancing universal access to healthcare to meet the health needs of the population and promote well-being. Furthermore, the study demonstrated that improved healthcare access not only enhanced satisfaction with health but also increased satisfaction across other domains of SWB, particularly in standard of living, community connectedness, and future security. Thus, good access to healthcare emerged as a comprehensive contributor to various aspects of SWB.

4.4 Affordability for healthcare and SWB

Notably, this study did not find significant relationships between affordability for healthcare and SWB. Despite significant differences in SWB across various supplementary health insurance coverages in univariate analysis, this study found that neither basic health insurance coverage nor supplementary medical insurance was correlated with SWB in Tibet adjusting for several control variables, accessibility and availability. The finding was consistent with previous study which also found Affordable Care Act Medicaid expansion had no effect on SWB [1]. In contrast, Kim and Keng found extension of health insurance coverage had positive effects on SWB [41, 42]. The possible explanation for this mixed relationship maybe that OOP healthcare spending rather than health insurance coverage had positive direct effects on SWB. The health insurance coverage may improve SWB through decreasing OOP but itself had no direct effect on SWB. Boarini also reported that low healthcare co-payment was related with high SWB [43]. As the government fund accounted for majority of total health expenditure (66.30%) in Tibet, the OOP was as low as 5.62% in 2018 [44]. Both basic and supplementary health insurance may have limited effect on share of OOP and SWB in Tibet.

4.5 Limitations

Several limitations warrant consideration. Firstly, this cross-sectional design impedes the observation of SWB trends over time or the inference of causal relationships between affordability for healthcare and SWB. Secondly, the NHSS questionnaire did not include religion, prevalent among Tibetans and a potentially significant factor for SWB. Thirdly, the PWI questionnaire in this study excludes items of safety and the score of PWI is incomparable with other studies.

Fourthly, the bidirectional relationship between health status and SWB poses challenges in this cross-sectional study to fully examine the complex mechanisms between healthcare access, health status, and SWB.

5 Conclusion

In summary, this study conducted the comprehensive analysis of SWB in Tibet, coupled with an investigation into the association between healthcare access and SWB. Our findings indicate that the Tibetans reported high level of satisfaction on overall life and all domains of life. Furthermore, the study demonstrated the pivotal role of favorable healthcare access in fostering heightened overall SWB and influencing its diverse domains. Future research endeavors should adopt longitudinal study designs to unravel the potential mechanisms shaping the relationship between healthcare access and SWB.

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Statements of ethical approval

This study was approved by the Health and Family Planning Commission (HFPC) of the Tibet Autonomous Region. Respondents provided oral informed content before participating interview because of low educational level, which was also approved by the HFPC of Tibet.

Competing interests

None declared.

Data statement

The data used in this study are not publicly available due to the confidential policy.

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Authors' contributions

Chaofan Li: Conceptualization, Methodology, Software, Formal analysis, Data curation, Writing - Original Draft, Writing - Review & Editing.
Xiaoyan Wu: Methodology, Software, Formal analysis, Data curation.
Yongzhu Lacuo: Investigation, Data curation.
Liyong Lu: Formal analysis, Validation.
Gang Chen: Conceptualization, Methodology, Writing - Review & Editing, Supervision.
Zhaxi Dawa: Conceptualization, Investigation, Resources, Project administration, Funding acquisition.
Shunping Li: Conceptualization, Investigation, Project administration, Resources.

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Supplementary Files