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FACTORS INFLUENCING HEALTHCARE SERVICES UTILIZATION AMONG THE ELDERLY BASED ON ANDERSEN BEHAVIORAL MODEL IN JIANGSU, CHINA, THE MODERATING ROLE OF INTER-GENERATIONAL SUPPORT

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Abstract

The phenomenon of ageing has emerged as a significant issue in Jiangsu province, China, resulting in substantial societal and familial burdens. Chinese older individuals have the option to select between institution-based, community-based, and home care services. Nevertheless, the majority of them continue to rely on a pension system that is focused on staying at home, which places a significant strain on several Chinese households. This study aims to utilise the Andersen behavioural model, a widely-used framework in health care research, to examine the individual-level behavioural factors that influence older adults' willingness to use health care services. Specifically, the study will investigate the predisposing characteristics, enabling factors, and need factors that impact the utilisation of health care services among older adults. This research aims to investigate the moderating influence of inter-generational support, based on the embeddedness theory, in order to provide a more full understanding of the Andersen behavioural model, which previously overlooked this aspect. The empirical procedure used a quantitative research approach, namely using the stratified sample methodology. The association between variables in the existing conceptual framework is examined using Structural Equation Modelling (SEM) with AMOS. Specifically, Structural Equation Modelling (SEM) is conducted using Confirmatory Factor Analysis (CFA), a measurement model, and a structural model. As the moderator of the present study framework, we conducted a multi-group analysis in structural equation modelling (SEM) to examine inter-generational support. The statistical analysis showed that certain factors, such as health belief, individual-related resources, and perceived need, significantly influenced the intention of older adults in Jiangsu, China to choose institutional healthcare services. Inter-generational assistance has a detrimental effect on the connection between predisposing features and healthcare utilisation, between enabling resources and healthcare utilisation, and between need factors and healthcare utilisation.

Keyword; elderly people, health care services, Andersen behaviour.

Introduction

The insufficient use of maternal healthcare services is a significant issue in several developing areas worldwide, despite being a crucial component of their development agendas. Low- and middle-income countries (LMICs) have the primary responsibility for maternal mortality and morbidities due to many factors, including unequal access, high costs, limited availability, and substandard quality. Since the start of the 21st century, the ageing population has emerged as a significant menace to humanity, dramatically impacting several elements of society. Specifically, during the 1870s, several western European countries, with France in the forefront, entered into an ageing society. In the 20th century, particularly following World War II, several prosperous countries had a significant rise in their elderly populations (Liu et al., 2023). The phenomenon of population ageing in China started in the late 1970s and has continually gained momentum at an annual rate of around 3.2% since that time (Liu, 2006). In recent decades, the population has seen significant changes in its composition, mostly owing to several socioeconomic factors. These factors include the establishment of the one-child policy, increased urbanisation, and changes in reproductive choices influenced by industrialization. China's ageing population is undergoing rapid expansion and has grown more intricate, distinguishing it from the ageing demographics of prosperous countries (Qiao et al., 2023). The phenomenon of population ageing is most prominent in developed countries, requiring a span of more than 45 years to transpire. Nevertheless, it is expected that China would undergo this process within a significantly condensed period of about 27 years (Xie et al., 2012). Furthermore, the ageing situation in China exhibits the following distinct features: ageing occurring before social and economic progress, unequal distribution of senior people across different regions, and a gradual increase in the ageing dependence ratio, starting off sluggish and then accelerating (Qiao et al., 2023). According to United Nations data, the population of those over the age of 60 in China has reached 0.96 billion, representing nearly 13% of the world population. The world ageing population is projected to increase by 3% yearly, according to the United Nations. By 2030, it is forecast to reach 1.4 billion, by 2050 it will be 2.1 billion, and by 2100 it is expected to reach 3.1 billion. China is now experiencing a severe ageing crisis. As of 2018, the number of elderly people in China aged 60 and over was 24.9 million, making up 17.9% of the total Chinese population (Li & Bai, 2020).

Based on the 7th national census, the level of ageing in China increases progressively from the western region to the eastern region. Jiangsu is rated fifth in China in terms of ageing level, with the population aged over 65 years old accounting for 16.2% of the total population. According to Zhu et al. (2022), Jiangsu has entered a profound ageing society. Specifically, Nantong, Zhenjiang, Taizhou, Wuxi, and Yangzhou have a significant degree of population ageing within Jiangsu province (Wang & Geng, 2021). Due to the early onset of the ageing process in Jiangsu, the overall quality of geriatric services has been consistently good (Wang & Geng, 2021). According to Wang (2016), there were a total of 2374 senior care facilities and 18.2 thousand community-based caring services in Jiangsu province as of the end of 2020. Despite receiving substantial assistance from

medical facilities, care institutions, community-based organisations, and other sources, there remains a significant disparity between the available medical resources and the real demands of the older population in Jiangsu province (Wang, 2016). Using Wuxi as an example, the 7th national census reveals that over the last ten years, Wuxi has had the most rapid increase in both the pace of development and the percentage of senior people. The number of those aged 60 and over has risen to 1.47 million, exhibiting a growth rate of 57.3%. Although there are rapidly advancing community-based and institutional senior care services, over 98% of older individuals in Wuxi choose to remain in home-based elderly care (Yang, 2022). Statistics indicate that the Jiangsu province, namely Wuxi city, is experiencing rapid ageing. Moreover, a significant portion of community-based and institutional aged care services in the area are not being fully used. Hence, it is reasonable to conduct a thorough examination of age-related issues in Jiangsu, namely in Wuxi. Substitutions of healthcare services are becoming significant in the advancement of the pension business (Zong & Xiao, 2021). Thus, by completely utilizing resources in social health care services, the stress of caring for the old, particularly for families, may be substantially alleviated. Put simply, if elderly individuals are prepared to participate in healthcare programs rather than relying only on home-based care, it will significantly alleviate the strain on family carers. Nevertheless, Gao (2017) asserts that the home-based pension system remains prevalent in contemporary Chinese culture and is favored by the majority of elderly individuals. The percentage of older individuals opting for institutional pension is often below 5%, indicating a relatively low rate of selection. Despite the growing availability of healthcare services, the majority of elderly Chinese seniors still choose to receive care at home, and the duty of caring for them falls mostly on their families. What is the reason for family care being the predominant pension method in China? Filial piety, a fundamental principle in traditional Chinese philosophy, encompasses the younger generations' profound reverence, devotion, and attentiveness towards their parents. This concept is deeply ingrained in Chinese culture (Hu, 2023). Across history, a significant number of Chinese individuals adhere to the belief of "raising children to provide for old age." This belief aligns with the back-feeding theory, which asserts that adult children have an obligation to care for their parents as a reciprocation for their efforts in raising them (Ji, 2022). Chinese older persons often have more comfort when receiving care from their adult children as opposed to unfamiliar carers. Consequently, Chinese older adults have significant expectations about the supporting actions of their adult children (Li, Zhang, & Xiong, 2019). Certain elderly individuals have a sense of "losing face" and feel ashamed to disclose their decision to register in pension institutions, as they see this choice as being abandoned by their adult offspring (Huang Xiting & Yue Tong, 2022). Consequently, facilities dedicated to provide care services for the elderly are not being fully used, and the predominant method of receiving pension in contemporary Chinese culture is via home-based arrangements. To address the aforementioned issues and to bridge the gaps in knowledge, literature, and research, this study aims to examine the variables that influence the intention of older adults in Jiangsu, China, to use healthcare services. Particularly, to what degree is each type of elements under Andersen behavioral model impacting their choice in utilising healthcare services. It is worth mentioning that as individual decision-making is frequently influenced by the

family environment, the function of inter-generational support in the utilisation of health care services by older individuals is also being studied.

Literature review

Predisposing Characteristics and Healthcare Services Utilization

Factors that contribute to an individual's susceptibility and the extent to which they use healthcare services. Predisposing traits, a significant variable in the Andersen behavioural model, have been identified as a crucial predictor of individuals' health-related behaviour (Lee et al., 2023; Chen et al., 2021; Ai, Tao-Tao-Tao & Song, Muzi, 2021). Based on empirical data from current literature, most studies have verified that predisposing traits have a significant role in predicting people' utilisation of health-related services. Wang Lin (2021) shown that the selection of long-term pension services by older persons is clearly impacted by predisposing features. Xie (2020) found that certain qualities that make someone more likely to have a certain attitude or behaviour are important variables that influence older individuals' willingness to pay for institutional pension services. This conclusion was reached after analysing data from 30 provinces in China. Su (2018) confirmed that some inherent traits have a substantial impact on the inclination of older individuals to acquire socialised pension services. Nevertheless, according to the empirical research conducted by Tao Sha and Lin Lei. (2020), predisposing traits do not play a significant role in affecting the purchase intention of older persons for pension services, as shown in the CLASS data. Although some smaller studies have been unable to demonstrate the causal impact of predisposing traits, the majority of empirical data from prior literature strongly supports the predictive significance of these variables in determining respondents' intention to pick health-related services. Therefore, the hypothesis 1 constructed as below;

H1: Predisposing characteristics significantly influence older adults' intention to use healthcare services in Jiangsu, China.

Enabling Resources and Healthcare Services Utilization

Enabling resources, a key component in the Andersen behavioural model, have been confirmed as a major element that affects individuals' health-seeking behaviour, according to studies by Lee et al. (2023), Chen et al. (2023), Ai, Tao-Tao-Tao and Song, Muzi (2021). By examining the current literature, the majority of studies confirm the predictive function of enabling resources in their entirety. For instance, Su in (2018) shown that the availability of various resources that may be accessed by respondents, known as enabling resources, significantly impacts the desire of rural Chinese older people to buy socialised healthcare services. Wu Cailing in (2023) discovered that the overall provision of enabling resources has the greatest impact according to the Andersen behavioural model, affecting the choice of older persons for a mix of medical care and long-term pension facilities. Soeprijono et. al., in (2021)confirmed that the collective resources that facilitate a certain outcome are important in predicting individuals' inclination to seek treatment for depression-related health services in Germany. Similarly, Suntai (2021) demonstrated that

enabling resources play a crucial role in motivating older persons, regardless of their race, to engage in proactive care planning. Zeng et al. (2021) confirmed that the presence of enabling resources may accurately predict the healthcare-seeking behaviour of older persons in China. However, a very limited number of research were unable to confirm the effectiveness of enabling resources. According to a research conducted by Kim and Kim (2021) in Korea, enabling resources, when considered as a whole, have less importance in explaining the utilisation of health care by outpatients. Thereby, the hypothesis 2 proposed as;

H2. Enabling resources significantly influence older adults' intention to use healthcare services in Jiangsu, China.

Need Factors and Healthcare Services Utilization

The need factors, which are a key independent variable in the Andersen behavioural model, have been confirmed as a strong predictor of people' health-related behaviour according to studies conducted by Lee et al. (2023), Chen et al. (2021), and Alhalaseh et al. (2021). Previous research has consistently shown that the need factor strongly affects people' inclination to use health-related services. In their study, Liu et al. (2019) highlighted the importance of the need factor in determining the preference of elderly adults in Lugu city, China, for a combination of medical care and pension services. A research done by Che and Cheung (2022) indicated that need factors had a direct influence on the older individuals' propensity to seek psychological care services in Changsha City, China. Kim & Lee (2016) showed that need factors had a significant influence on the use of healthcare services among elderly adults in Korea.. Nguyen and Giang (2021) confirmed that need criteria are linked to the selection of healthcare facilities among senior individuals in Vietnam. However, Wei and Zhang (2020) were unable to identify any significant predictive significance of need variables while examining the preferences of older persons in Xiamen, China for long-term pension. In a similar vein, Schomerus et al. (2013) did not find a significant predictive impact of need variables in the use of depression-related health care among the elderly in Germany. Therefore, hypothesis constructed as;

H3. Need factors significantly influence older adults' intention to use healthcare services in Jiangsu, China.

Inter-generational Support as Moderator

It is the opinion of Guo et al. (2015) researchers should investigate moderation models that investigate more complicated casual effects on the correlation between predisposing characteristics, enabling resources, need factors, and individuals' utilisation of healthcare services in accordance with the Andersen behavioural model. In spite of the fact that Tian and Wang (2021) discovered that inter-generational support did not have a significant affect on the use of health-related services by persons, Wang (2016) shown that inter-generational support had a substantial impact on the utilisation of long-term care by older adults. In addition, Chen et. al., (2021) discovered that a lower level of inter-generational support was a significant predictor of a greater rate of use of health-related services. To be more explicit, inter-generational assistance include financial support, instrumental help, and emotional comfort, all of which have the potential to

impact the desire of older persons to make use of health services (Tao, Yuan, & Liu., 2020). There are two types of financial assistance that may be provided between parents and adult children: monetary support and help in kind. When people talk of instrumental support, they typically mean personal aid and compassion. According to Wu (2023), emotional comfort is characterised by the exchange of closeness, trust, and confidence. Although there is a correlation between inter-generational support and the propensity of older persons to use health care services, the effect of this relationship may vary depending on the characteristics that are considered. With regard to the provision of financial assistance, the findings of Tao, Yuan, and Liu (2021) shown that there is no correlation between the provision of financial assistance to children and the utilisation of care services by older individuals. Elderly individuals who had a lower self-perceived health status or a higher number of chronic diseases were more inclined to receive financial, daily caregiving, or emotional assistance from their children (Chen, Leeson, & Liu, 2017; Taniguchi, Kaufman, & Filial Norms, 2017; Chen & Jordan, 2018; Kim et al., 2017; Mure¸san, 2017). Nevertheless, Bai et. al., (2020) discovered that those with a less favourable health state, such as chronic disorders, were more unlikely to get inter-generational assistance. Bai (2019) posited that elderly individuals with unfavourable physical and functional circumstances may exhibit hesitancy in burdening their adult offspring, and the help provided by their children may not fully satisfy their parents' requirements. Thus hypothesis 4,5 and 6 develoed as;

H4: Inter-generational support moderates the relationship between predisposing characteristics and older adults' care service utilization.

H5: Inter-generational support moderates the relationship between enabling resources and older adults' care service utilization.

H6: Inter-generational support moderates the relationship between need factors and older adults' care service utilization.

Finding

Reliability

Reliability as been recognized as the extent to which the observed variable assess the true value without error (Hair et al., 2020). That is, reliability measures whether a number of items or observed variables assess the same latent construct. According to Awang, Afthanorhan andAsri in (2015), reliability of a measurement model can be measured with internal reliability, composite reliability (CR), and average variance extracted (AVE). Particularly, internal reliability can be measured with Cronbach's alpha, and when Cronbach's alpha is over 0.70, it implies internal consistency of the item (Hair et al., 2020). According to the following Table 1, Cronbach's alpha coefficient of all constructs are over 0.7, implying achieving the internal reliability. In addition, the composite reliability (CR) is the measurement of reliability and internal consistency for an underlying construct. According to the following Table 1, all constructs' CR values are over 0.6, implying achieving composite reliability of all constructs. Besides, researchers suggested that the rule of thumb is AVE value over 0.5 for any construct (Hair et al., 2020). According to the

following Table 1, reliability of the current measurement model has achieved. The following Table 1 presents that the value of composite reliability (CR) was between 0.846 and 0.961, which are above the threshold of 0.7. Besides, the value of average variance explained (AVE) were above 0.50, indicating acceptable. Thus, the scale used showed acceptable level of reliability.

Table 1: Construct Validity and Reliability

variable	item	Factor load	CR	AVE	Cronbach's Alpha
SC	SC2	0.814	0.885	0.657	0.884
	SC3	0.813			
	SC5	0.812			
	SC6	0.803			
HB	HB1	0.752	0.903	0.65	0.902
	HB2	0.735			
	HB3	0.865			
	HB4	0.849			
	HB5	0.823			
IR	IR1	0.883	0.886	0.61	0.884
	IR2	0.793			
	IR3	0.742			
	IR4	0.728			
	IR5	0.748			
FR	FR1	0.88	0.892	0.674	0.891
	FR3	0.79			
	FR4	0.801			
	FR5	0.809			
SS	SS1	0.726	0.886	0.61	0.882

	SS3	0.738			
	SS4	0.805			
	SS5	0.897			
	SS6	0.726			
	AC1	0.76			
	AC2	0.731			
AC	AC3	0.778	0.869	0.569	0.869
	AC4	0.748			
	AC5	0.755			
	PN1	0.846			
	PN2	0.729			
PN	PN3	0.721	0.873	0.581	0.871
	PN4	0.759			
	PN5	0.748			
	EN1	0.79			
	EN2	0.743			
EN			0.846	0.578	0.841
	EN3	0.755			
	EN5	0.752			
	IS1	0.729			
	IS2	0.726			
	IS3	0.727			
IS			0.952	0.624	0.951
	IS5	0.811			
	IS6	0.727			
	IS7	0.748			

	IS8	0.774			
	IS9	0.836			
	IS10	0.821			
	IS11	0.819			
	IS12	0.859			
	IS13	0.881			
	HU2	0.772			
	HU3	0.751			
	HU4	0.736			
	HU5	0.746			
	HU7	0.767			
	HU8	0.826			
	HU9	0.827			
	HU10	0.777			
HU	HU11	0.806	0.961	0.604	0.96
	HU13	0.783			
	HU14	0.732			
	HU15	0.783			
	HU16	0.768			
	HU17	0.838			
	HU18	0.768			
	HU19	0.74			

Discriminant Validity

Discriminant validity can be measured through value of AVE of each construct against squared correlations between the constructs in the study model. Normally, according to Hair et

al.(2010), a construct has sufficient discriminate validity if the square root the AVE is over the correlations among the constructs. The following Table 2 illustrates that the square root of AVE for each construct exceeds each of the correlations between constructs, implying sufficient discriminant validity for all constructs. According to Kline (2011), if the values of correlations between latent variables less than the threshold of 0.85, and the squared correlation was below the square root of the AVE by indicators, good discriminant validity between constructs can be inferred. Therefore, the model can proceed for further analysis of hypotheses testing.

Table 2: Discriminant Validity

	SC	HB	IR	FR	SS	AC	PN	EN	IS	HU
SC	**0.811**									
HB	.524**	**0.806**								
IR	.375**	.367**	**0.781**							
FR	.368**	.396**	.548**	**0.821**						
SS	.358**	.400**	.539**	.506**	**7.810**					
AC	.384**	.389**	.531**	.517**	.535**	**0.754**				
PN	.393**	.488**	.382**	.374**	.379**	.370**	**0.762**			
EN	.376**	.419**	.360**	.365**	.306**	.368**	.547**	**0.760**		
IS	-.199**	-.339**	-.106*	-.146**	-.218**	-.235**	-.298**	-.136**	**0.790**	
HU	.456**	.536**	.588**	.506**	.512**	.558**	.531**	.447**	-.319**	**0.777**

The following Table 3 illustrates descriptive statistics for each construct included in the study model. For socioeconomic characteristics, the mean score is 3.649 (SD=1.032); For health belief, the mean score is 3.541 (SD=1.031); For individual resources, the mean score is 3.760 (SD=0.866);

For family-related resources, the mean score is 3.676 (SD=1.074); For social support, the mean score is 3.656 (SD=1.061); For accessibility, the mean score is 3.769 (SD = 0.966); For perceived need, the mean score is 3.684 (SD=0.895); For evaluated need, the mean score is 3.805 (SD=0.941). With regard to independent variables, independent variable, moderating variable within the research framework, for predisposing characteristics, the mean score is 3.595 (SD=0.901); For enabling resources, the mean score is 3.715 (SD=0.798); For need factors, the mean score is 3.745 (SD=0.807); For healthcare services utilization, the mean score is 3.639 (SD=0.810); For inter-generational support, the mean score is 3.384 (SD=0.836). Concerning standard deviation, all constructs values are less than 1, indicating consistency of responses.

Table 3: Descriptive Statistics of the Constructs

	N	Minimum	Maximum	Mean	Std. Deviation
SC	452	1.00	5.00	3.649	1.032
HB	452	1.00	5.00	3.541	1.031
IV1PC	452	1.10	5.00	3.595	0.901
IR	452	1.00	5.00	3.760	0.866
FR	452	1.00	5.00	3.676	1.074
SS	452	1.20	5.00	3.656	1.061
AC	452	1.00	5.00	3.769	0.966
IV2ER	452	1.10	5.00	3.715	0.798
PN	452	1.20	5.00	3.684	0.895
EN	452	1.00	5.00	3.805	0.941
IV3NF	452	1.10	5.00	3.745	0.807
IS	452	1.00	5.00	3.384	0.836
HU	452	1.00	5.00	3.639	0.810

According to Hair et al. (2010), path analysis tests the fitness of the measurement model through demonstrating specific statistics of the relationship between the independent variables and dependent variable. Path analysis, which is also known as structural model evaluation, focuses on the overall model fit, size, direction, as well as significance of the hypothesized parameter

estimates. Normally, as was discussed in previous section, the relative chi-square value is suggested to be below 5.0. Values of GFI, AGFI, CFI, IFI, as well as TLI are supposed to be over 0.90. According to Byner, Matthias and Ding in (2019), RMSEA and RMR are recommended to be less than 0.08, indicating a good fit. Besides, Hair et al. (2010) also underscore that the overall structural model fit can be guaranteed when any three to four indices mentioned above meet the required threshold, implying proceeding to further analysis of hypothesis testing. SEM is conducted through maximum likelihood method analysis with AMOS, results are presented as below.

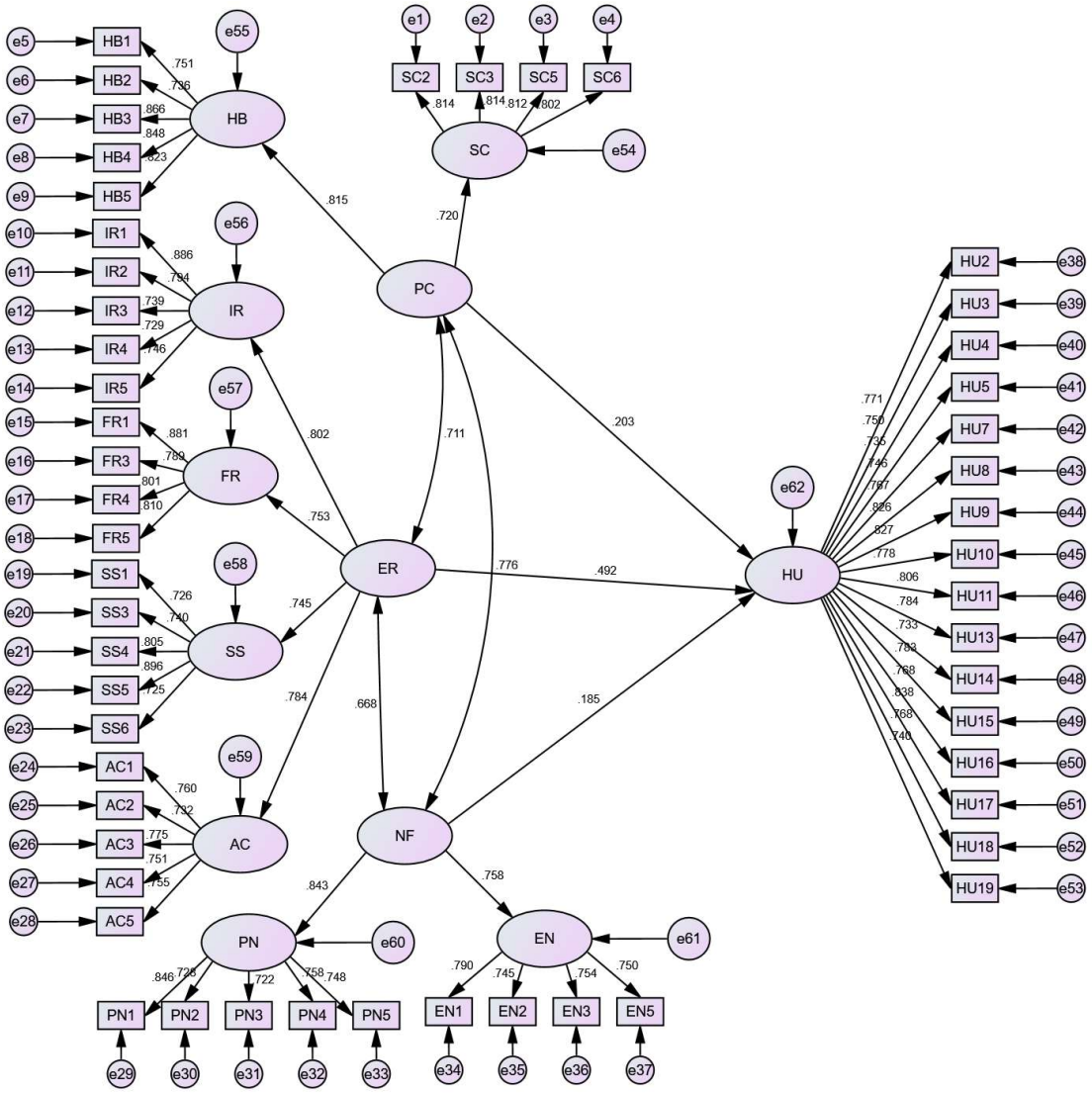

Figure 1: Structural Model of the Study with Standardized Regression Weights

The goodness-of-fit indices of the current model were calculated with maximum likelihood (ML) method. As is illustrated in the figure below, the df=1.341, GFI=0.879, AGFI=0.868, CFI=0.971, more than the threshold of 0.90. RMSEA=0.028, which also meets the threshold.

Table 4: Goodness-of-fit Indices

indicators	Ideal value	data	result
CMIN	——	1758.346	——
DF	——	1311	——
CMIN/DF	<3	1.341	accepted
RMR	<0.08	0.045	accepted
GFI	>0.8	0.879	accepted
AGFI	>0.8	0.868	accepted
IFI	>0.9	0.972	accepted
TLI	>0.9	0.970	accepted
CFI	>0.9	0.971	accepted
RMSEA	<0.08	0.028	accepted

To conclude, the current structural model fits the goodness-of-fitness indices, and can proceed to further hypothesis testing. Accordingly, unstandardized and standardized regression wights under the structural model were demonstrated in the Table 5 below. It can be seen from the Table 5 that predisposing characteristics have significantly positive influence on healthcare utilization (β=0.203, $p<0.05$), which supported hypothesis 1. Enabling resources have significantly positive influence on healthcare utilization (β=0.492, $p<0.05$), which supported hypothesis 2. Need factors have significantly positive influence on healthcare utilization (β=0.185, $p<0.05$), which supported hypothesis 3.

Table 5: The Structural Model of the Study with Standardized Regression Weights

Path	Standardized Coefficient	Standardized Coefficient	S.E.	C.R.	P	hypo

HU	<---	PC	0.203	0.221	0.106	2.092	0.036	supported
HU	<---	ER	0.492	0.531	0.077	6.894	***	supported
HU	<---	NF	0.185	0.194	0.093	2.096	0.036	supported

Structural Model for Each Dimension

In order to investigate influencing factors within each independent variable, namely, factors of each dimension, SEM is conducted through maximum likelihood method analysis with AMOS, results are presented as below.

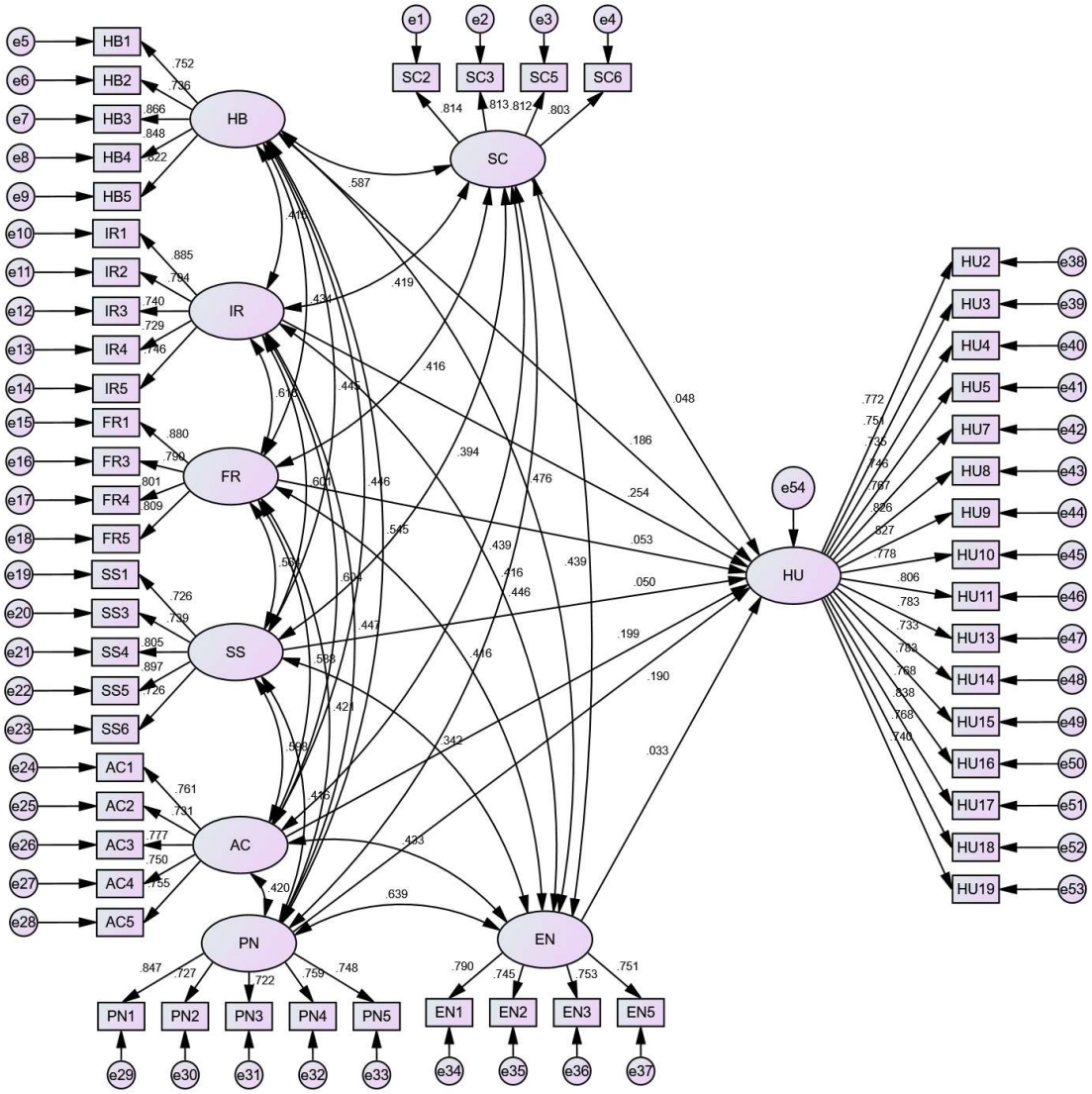

Figure 2: The Structural Model of the Study with Standardized Regression Weights

The goodness-of-fit indices of the current model were calculated with maximum likelihood (ML) method. As is illustrated in the figure below, the df=1.349, GFI=0.880, AGFI=0.867, CFI=0.971, more than the threshold of 0.90. RMSEA=0.028, which also meets the threshold.

Table 6: Goodness-of-fit Indices

indicator	Ideal value	data	result
CMIN	——	1738.726	——
DF	——	1289	——
CMIN/DF	<3	1.349	accepted
RMR	<0.08	0.043	accepted
GFI	>0.8	0.880	accepted
AGFI	>0.8	0.867	accepted
IFI	>0.9	0.972	accepted
TLI	>0.9	0.969	accepted
CFI	>0.9	0.971	accepted
RMSEA	<0.08	0.028	accepted

To conclude, the current structural model fits the goodness-of-fitness indices, and can proceed to further hypothesis testing. The Table 7 below illustrates structural model of influence from each dimension to healthcare utilization in the current study with standardized regression weights. On the basis of results found in previous section, supporting the first three hypotheses, this section helps to look into specific influence on each dimension within the three independent variables, namely, predisposing characteristics, enabling resources, and need factors. Predisposing characteristics contain two dimensions, socioeconomic characteristics and health belief. From the Table 7 below, influence of socioeconomic characteristics on healthcare services utilization is insignificant (β=0.048, $p>0.05$), while health belief has significantly positive influence on healthcare services utilization (β=0.186, $p<0.05$). Therefore, among predisposing characteristics, health belief has a direct influence on healthcare services utilization among the elderly in Jiangsu, China. This is despite predisposing characteristics as a whole has a significant relationship with healthcare services utilization.

Enabling resources includes four dimensions, individual resources, family-related resources, social support, and accessibility. As can be seen from the Table 7 below, individual resources has significantly positive predicting effect on respondents' healthcare services utilization (β=0.254, p<0.05). However, family-related resources turn out to be insignificant in predicting healthcare utilization (β=0.053, p>0.05). Likewise, social support is also not prominent predictor of healthcare utilization behavior among respondents (β=0.05, p>0.05). Accessibility turn out to be positive in predicting respondents' health-related services utilization behavior (β=0.199, p<0.05). Particularly, according to standardized coefficient value, individual resources plays the most significant role in dimensions within enabling resources compared with accessibility.Thereby, among enabling resources, individual resources and accessibility has a direct influence on healthcare services utilization among the elderly in Jiangsu, China. This is despite enabling resources as a whole has a significant relationship with healthcare services utilization. Need factors include perceived need and evaluated need factors. As is presented in the following Table 7, perceived need has significantly positive influence on respondents' healthcare services utilization (β=0.19, p<0.05), while evaluated need turn out to be insignificant (β=0.033, p>0.05). In summary, among need factors, perceived need has a direct influence on healthcare services utilization among the elderly in Jiangsu, China. This is despite need factors as a whole has a significant relationship with healthcare services utilization.

Table 7: Structural Model of the Study with Standardized Regression Weights

path			Standardized Coefficient	Standardized Coefficient	S.E.	C.R.	P	Results
HU	<---	SC	0.048	0.038	0.037	1.024	0.306	refused
HU	<---	HB	0.186	0.164	0.045	3.672	***	supported
HU	<---	IR	0.254	0.22	0.047	4.667	***	refused
HU	<---	FR	0.053	0.04	0.039	1.033	0.301	refused
HU	<---	SS	0.05	0.042	0.043	0.977	0.328	refused
HU	<---	AC	0.199	0.178	0.049	3.624	***	supported
HU	<---	PN	0.19	0.168	0.048	3.49	***	supported
HU	<---	EN	0.033	0.035	0.056	0.626	0.531	refused

Moderation Analysis

According to Preacher, Rucker, and Hayes (2007), when the strength of the association between two variables is dependent on a third variable, moderating effect is considered to occur. That is to say, moderator functions as changing the effect from independent variables on dependent variable, and is a secondary independent variable which is under the control of the researcher. Moderator is the variable that determines the situation in which the independent variable is related to dependent variable.

The moderating effect is usually discussed according to the following three conditions: Firstly, increasing the moderator effect increases the effect of independent variable on dependent variable; Secondly, increasing the moderator effect weakens the effect of independent variable on dependent variable; Thirdly, increasing the moderator effect reverses the effect of independent variable on dependent variable.

In order to test the moderating effect of inter-generational support in the specific model, multi-regression analysis is adopted. To be specific, interaction effect between the independent variable and modified variable is measured to check whether this interactive effect influences the dependent variable.

Moderation Analysis of IS between PC and HU

The first procedure is to create standard variables for the moderator and independent variable, which is known as the dummy variable, guaranteeing no occurrence of high correlation between the two variables. When conducting the adjustment test, first decentralize PC and IS, and then multiply them to obtain the interaction term PC * IS. The dependent variable (HU) is influenced by the first independent variable PC, the second is IS (moderating factor), and the third is the outcome variable of the interaction between the independent variable and the moderating factor. Each of the three variables independently affects the dependent variable (HU). Afterwards, measure the effects of independent variables, moderating factors, and interaction terms on the dependent variable, and the linear regression equation between the three is as follows:

$$Y= \beta_0 + \beta_1 X + \beta_2 M + \beta_3 XM + e$$

Based on this, Y is the dependent variable (HU), X is the independent variable, and M is the moderating factor (IS), then XM is the interaction effect between the independent variable and the moderating factor, and e is the measurement error value. In theory, the standard regression coefficient β The value of 3 ($p<0.05$) shows that in the current research model, the adjustment factor M (IS) corrects the relationship between independent variables and dependent variables. Using the hierarchical multiple regression method to measure the moderating effect between the independent and dependent variables, and conducting linear regression tests on the values of three variables (independent variable X, moderating variable M, and interaction variable XM). From the

Table 8 below, it can be concluded that PC * IS has an effect on HU（β=- 0.237 ($p<0.05$) has a significant negative impact, indicating that IS has a negative regulatory effect between PC and HU. The hypothesis is valid, indicating that the effect of IS weakens the relationship between PC and HU.

Table 8: Moderating Influence of IS between PC and HU

Model		Unstandardized Coefficients		Standardized Coefficients	t	p	R Square	F
		B	Std. Error	Beta				
1	(Constant)	3.639	0.031		116.015	0.000	0.323	214.974***
	PC	0.511	0.035	0.569	14.662	0.000		
2	(Constant)	3.639	0.031		117.889	0.000	0.346	118.812***
	PC	0.467	0.036	0.520	12.956	0.000		
	IS	-0.154	0.039	-0.159	-3.956	0.000		
3	(Constant)	3.591	0.031		116.658	0.000	0.395	97.69***
	PC	0.390	0.037	0.434	10.554	0.000		
	IS	-0.198	0.038	-0.204	-5.188	0.000		
	PC*IS	-0.210	0.035	-0.237	-6.050	0.000		

Moderation Analysis of IS between ER and HU

In order to test the moderating function of the second independent variable in the research framework, enabling resources, the following test is conducted. Particularly, taking ER as the independent variable and IS as the moderating variable, the interaction term ER * IS is obtained by decentralizing ER and IS, and HU is used as the dependent variable for moderation analysis, resulting in the following Table 9. From the following table, it can be concluded that ER * IS has an impact on HU（β=- 0.167 ($p<0.05$) has a significant negative impact, indicating that IS has a negative regulatory effect between ER and HU, and the hypothesis is supported.

Table 9: Moderating Influence of IS between ER and HU

Model		Unstandardized Coefficients		Standardized Coefficients	t	p	R Square	F
		B	Std. Error	Beta				
1	(Constant)	3.639	.028		128.425	.000	0.448	364.845***
	ER	.679	.036	.669	19.101	.000		
2	(Constant)	3.639	.028		131.987	.000	0.478	205.834***
	ER	.639	.035	.629	18.006	.000		
	IS	-.174	.034	-.179	-5.129	.000		
3	(Constant)	3.617	.027		132.091	.000	0.502	150.827***
	ER	.582	.037	.574	15.845	.000		
	IS	-.214	.034	-.221	-6.259	.000		
	ER*IS	-.152	.033	-.167	-4.666	.000		

Moderation Analysis of IS between NF and HU

In order to test the moderating function of the third independent variable in the research framework, need factors, the following test is conducted. Specifically, taking NF as the independent variable and IS as the moderating variable, the interaction term NF * IS is obtained by decentralizing NF and IS, and HU is used as the dependent variable for moderation analysis, resulting in the following Table 10. From the Table 10 below, it can be concluded that NF * IS affects HU（β=- 0.315 ($p<0.05$) has a significant negative impact, indicating that IS has a negative regulatory effect between NF and HU, and the hypothesis is supported.

Table 10 : Moderating Influence of IS between NF and HU

Model	Unstandardized Coefficients	Standardized Coefficients	t	p	R Square	F

		B	Std. Error	Beta				
1	(Constant)	3.639	.032		114.690	.000	0.308	199.879***
	NF	.556	.039	.555	14.138	.000		
2	(Constant)	3.639	.031		117.643	.000	0.343	117.386***
	NF	.508	.040	.507	12.857	.000		
	IS	-.189	.038	-.195	-4.947	.000		
3	(Constant)	3.592	.029		122.753	.000	0.435	114.756***
	NF	.426	.038	.424	11.195	.000		
	IS	-.251	.036	-.259	-6.927	.000		
	NF*IS	-.286	.034	-.315	-8.500	.000		

Discussion

This study aims to look into factors influencing older adults' intention to use healthcare services in the context of Jiangsu, China, based on the theoretical framework of Andersen behavioral model. An extensive literature was reviewed to lay strong foundation for this study, particularly, linkages between independent variables and the dependent variable, as well as function of the moderating variable, were drawn from previous literature. Six hypotheses were put forward based on critical analysis on previous literature, theoretically and empirically. All the hypotheses were empirically measured so as to achieve the study objectives. Specifically, findings of this study can be summarized to present achievement of the research objectives in the following section through answering research questions with brief discussion accordingly. The main objective of this study is to examine the underlying characteristics, such as socioeconomic circumstances and health attitudes, that influence the healthcare service requirements of elderly individuals in Jiangsu, China. Furthermore, the research seeks to determine the most influential factor among these predisposing characteristics. The analysis of the structural model indicated that some inherent characteristics significantly influenced the inclination of elderly individuals in Jiangsu, China to use healthcare services.

This discovery validates hypothesis H1. This finding is consistent with previous studies conducted on elderly immigrants in the United States (Chao et al., 2020), older adults in Korea (Kim & Lee, 2016), elderly residents in the middle and upper regions along the Yangtze River in China (Zeng et al., 2019), and elderly individuals in Xiamen, China (Wei & Zhang, 2020). After completing a

comprehensive analysis, it was shown that only the health belief component had a significant link with the inclination of elderly individuals in Jiangsu, China to use healthcare services. Although Schomerus et al (2013) found that certain health beliefs can impede access to healthcare services, this may be attributed to the reliance on problem-solving intentions and the presence of stigmatising attitudes, which can create barriers to seeking help (Jorm et al., 2006). This discovery is consistent with the results presented by Jiang et al (2020), which illustrate the significant impact of health beliefs on the actions of older individuals in accessing health care. Andersen's interpretation (1995) indicates that promoting fair and equitable access to healthcare services may be achieved by shaping the attitudes and values of older individuals towards healthcare resources. The research concluded that socioeconomic variables do not have a substantial influence on the intention of older persons to use healthcare services. This discovery challenges the findings of earlier research conducted by Andersen et al (1981) and Gelberg, Andersen, and Leake (2000), which indicated that the use of healthcare services is significantly affected by socioeconomic characteristics such as education and employment. Hwang (2018) elaborated that those with a lower socioeconomic position had a higher propensity to use healthcare services in Korea. However, Kattan and Abduljawad (2019) verified that socioeconomic variables do not have a substantial effect in people's desire to obtain outcomes, as shown below. Medical care. Oliver (1993) and Gooding (1995) assert that service utilisation behaviour is a cognitive decision that emphasises the importance of cognitive function. These findings suggest that in Jiangsu, China, health belief has a greater impact on predicting healthcare use behaviour among older persons than socioeconomic variables.

The second hypothesis investigated the correlation between enabling resources and the desire to use healthcare services among the senior population in Jiangsu, China. Additionally, the study aimed to identify the most important element among the enabling resources. The examination of the structural model revealed that the presence of enabling resources had a substantial impact on the intention of older persons to use healthcare services in Jiangsu, China. This finding confirms hypothesis H2. The confirmation of the role of enabling resources aligns with previous studies on various topics, such as American older adults' discussions on advance care planning (Suntai, Noh, & Won, 2022), the intention of Swedish urban older population to choose public care and services (Larsson, Thorslund, & Kåreholt, 2006), Korean respondents' utilisation of health-related services (Kim & Lee, 2016), the long-term care service needs of the elderly from the middle and upper reaches of the Yangtze River in China (2019), and non-urgent visits to health-related services by southwest Chinese older adults (Jiang et al., 2020). Upon additional investigation into the influence of enabling resources on respondents' inclination to use healthcare services, it was shown that only individual resources and accessibility are important variables in predicting older persons' desire to utilise healthcare services in Jiangsu, China. The discovery of the predictive function of individual-related resources in facilitating resources among the elderly aligns with other studies (Barth et. al., 2019; Edwards & Sen, 2019; Wei & Zhang, 2020; Hu et al., 2021). Hu et al. (2021) found that people are not using healthcare services because they are sensitive to the pricing of these treatments. This emphasises the significance of individual

affordability as a critical factor to consider. The research done by Kim and Lee (2016) found that variables such as economic status and degree of insurance coverage did not have a substantial influence on the utilisation of healthcare services among the participants. The variation in study results may stem from different research participants and time-related variables, impacted by various socio-cultural situations. This study suggests that the personal resources of elderly individuals have a crucial role in forecasting their use of healthcare services in Jiangsu, China. This study focuses on the citizens of Jiangsu province and emphasises the significant impact of accessibility on the inclination of older adults to participate in healthcare services. It implies that older individuals value convenience and effectiveness when making decisions about seeking medical treatment.

The third hypothesis examined the correlation between need factors and the desire to use healthcare services among the older population in Jiangsu, China. Additionally, it aimed to identify the most significant component among the need factors. The examination of the structural model revealed that the elements related to needs had a substantial impact on the intention of older individuals in Jiangsu, China to use healthcare services. This finding confirms hypothesis H3. The affirmation of the significance of need variables aligns with prior research conducted by Liu et al. (2019), Zhang et al. (2019), Zeng et al. (2019), and Wei & Zhang (2020). However, after doing a more thorough examination of the influence of need variables on respondents' inclination to use healthcare services, it was found that only perceived need factors emerged as significant predictors of older persons' desire to utilise healthcare services in Jiangsu, China. The lack of significance of the analysed need variables contradicts the findings of earlier studies. In their study, Schomerus et al. (2012) discovered that the assessed need variable explained 50% of the variation in healthcare use behaviour among older persons. Zenget et al. (2019) discovered a correlation between the frequency of identified chronic illnesses and the enrollment of healthcare services among older persons. Liu et al. (2019) discovered that older individuals with a higher number or more severe chronic illnesses were more inclined to participate in health-related services, highlighting the significant influence of assessed needs. Additional researchers have obtained comparable findings via empirical investigations (e.g., Chen, Chi, & Liu, 2018; Bowen & Gonzalez, 2008; Chou & Chi, 2004). Huang et al. (2021) found that self-rated health state is a multi-level indicator that reflects need components in empirical investigations, when compared to assessed needs. Perceived need refers to the knowledge on an individual's own physical and mental condition, including aspects such as physical state, mood, social role, and cognition (Idler et al., 1997).

The fourth hypotheses measured the the role of inter-generational support between predisposing characteristics and older adults' care service needs in Jiangsu, China. Statistical analysis shows relationship between predisposing characteristics and older adults' intention to use healthcare services weakens with the existence of inter-generational support among the elderly in Jiangsu, China. This confirms the weakening of the association between the two variables in the presence of strong inter-generational support. In other words, predicting role of predisposing

characteristics on older adults' intention to use healthcare services is weakened when they are provided with strong inter-generational support. This is in line with the result confirmed by Wang and Geng (2021), explained that older adults' intention to use institutional pension is influenced by predisposing characteristics on individual, but is moderated by inter-generational support provided by adult children or even grandchildren. Wang and Geng (2021) further confirmed that older adults' consumption behavior is not only affected by personal characteristics, but also influenced by financial, emotional, and instrumental exchange among family members.

The fifth hypotheses aims to assess the the role of inter-generational support between enabling resources and older adults' healthcare service needs in Jiangsu, China. Data analysis indicates that relationship between enabling resources and older adults' healthcare services utilization weakens with presence of strong inter-generational support among the elderly in Jiangsu, China. Despite results from Xin and Yang (2022), who revealed that urban older adults with high income and insurance level are more likely to choose institutional pension services with existence of strong inter-generational support. The current study result confirms weakening of the association between the two variables with the existence of inter-generational support. This result is in line with previous literature (Suntai etr al., 2022; Wang & Geng, 2021; Zheng et al., 2018). Particualrly, according to the empirical study carried out by Wang and Geng (2021), who investigated moderating role of inter-generational support on older adults' healthcare services utilization behavior. Wang and Geng (2021) revealed that the elderly with better economic situation, which is regarded as an important component of enabling resources, are more likely to choose health-related services. However, if adult children or even grandchildren can provide support, older adults are less likely to use healthcare services. Moreover, Zheng et al. (2018) confirmed that inter-generational support negatively moderates older adults' intention to choose healthcare services due to their reliance on inter-generational support from economy, emotion, and daily care. In addition, Hu, Luo, and Gong (2023) revealed that inter-generational support negatively influence relationship between older adults individual resources, such as income level and insurance type, and their payment intention for pension services in Changsha province, China, implying older adults' relying on support from adult children and grandchildren as replacement of institutional pension services.

The sixth research objective is to test the moderating role of inter-generational support between need factors and intention to use healthcare services among the elderly in Jiangsu, China. Statistical analysis implies that the relationship between need factors and older adults' intention to use healthcare services is buffered by inter-generational support in Jiangsu, China. That is, with existence of inter-generational support, predicting role of need factors on older adults' healthcare services utilization behavior weakens. This results echoes with the empirical research conducted by Ma, Wang, and Huang (2021). To be specific, the elderly with strong perceived need to use healthcare services are more likely to enroll. However, presence of inter-generational support has

negative influence on the relationship between the two variables (Ma et al., 2021). Particularly, emotional inter-generational support buffer the association between older adults' perceived need and their intention to choose institutional pension services. In addition, Zhou and colleagues (2013) reinforced inter-generational support, particularly financial support, moderates relationship between older adults' self-rated health states and their intention to enroll in institutional pension services.

Conclusion

In conclusion, the Andersen Behavioural Model served as a guiding framework for this research project, which aimed to shed light on the myriad of variables that influence the use of healthcare services among the senior population in Jiangsu, China. It has become abundantly clear, as a result of exhaustive research, that the utilisation patterns of healthcare services among the senior population are highly influenced by individual predisposing factors, enabling resources, and need factors. Moreover, the study has shown the substantial influence of inter-generational support in altering healthcare use patterns among the elderly. Interactions with family members, particularly the level of support received from younger generations, have been shown to be a crucial determinant that affects the behaviours of older individuals in seeking medical advice and treatment. The importance of family relationships and social support networks becomes evident when considering the facilitation of access to and utilisation of healthcare services for the elderly population. Furthermore, the findings emphasise the need of customising interventions and policies to include the complex interplay of personal characteristics, socioeconomic resources, and family dynamics in order to enhance healthcare usage among the elderly population in Jiangsu, China. Policymakers and healthcare practitioners may enhance healthcare access and delivery for this disadvantaged population by systematically addressing these issues. This will ultimately enhance health outcomes and enhance the quality of life for the elderly population.

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