



OPEN The potential usefulness of health asset valuation to promote health among Korean employees

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We aim to investigate perceptions of health asset value (HAV) among South Korean employees. We conducted an interviewer-administered nationwide survey to investigate perceptions of health asset valuations for the 1,000 Korean employees. Most respondents (63.4%–80.4%) agree on estimating the economic value of health assets and their implications. Higher education participants have more positive attitudes toward participating in personalized health improvement activities that increase the value of health assets (adjusted OR [aOR] 2.21, 95% CI 1.35–3.61). Participants with higher income tend to have more positive attitudes toward health assets, believing that they have economic value (aOR 1.36, 95% CI 1.01–1.82), considering systematic evaluation of health assets to be helpful for health management (aOR 1.53, 95% CI 1.11–2.09), and showing a willingness to continuously use programs that assess the value of health assets (aOR 1.98, 95% CI 1.37–2.85). Among the health status factors, good mental health is positively associated with a willingness to pay for health improvement programs (aOR 1.42, 95% CI 1.07–1.89). Finally, good spiritual health increases the likelihood of viewing health assets as having economic value (aOR 1.45, 95% CI 1.05–2), considering the systematic evaluation of health assets as helpful for health management (aOR 1.42, 95% CI 1.01–2.01), and being willing to pay for health improvement programs based on the value of health assets (aOR 1.51, 95% CI 1.11–2.06). This study suggests the potential usefulness of HAV to promote health.

Keywords Health assets, Valuation, Employees, Implications

Although societal goals in developed countries still generally focus on economic growth, income, and employment, individuals tend to value health more highly than their incomes or careers^{1,2}. Good health allows people to participate in family life, the workplace, and the community and significantly influences overall well-being. Health can be perceived as human capital and, thus, as an input to other necessary social values that allow people to live and prosper. Thus, for individuals and society to grow, health should be viewed as an asset worth investing in².

Globally, interest in promoting health and well-being has increased, with a scope that goes beyond the absence of disease to reducing health inequalities^{1,2}. Thus, notable efforts have been made to prioritize improving population health and reducing health inequalities along individual and social dimensions, requiring the implementation of appropriate interventions^{3,4}. However, previous attempts to do so have relied heavily on modifying individual behavioral and lifestyle choices, such as anti-smoking campaigns, rather than on the wider range of social determinants that may deliver insights into the policymaking process and can consequently drive population-level impacts³.

Recently, there has been increased interest in approaches based on health assets rather than the conventional deficit model, which focuses on identifying problems and illnesses to promote population health^{1,5–7}. The term “health asset” has various definitions but is generally used to describe any factor or resource that enhances the abilities of individuals, communities, organizations, populations, or social systems to maintain and sustain health and well-being and helps to reduce health inequalities at the individual, community, or organizational level^{1,5,6,8}. According to previous studies, health assets can be identified across all domains of health determinants, including genetic, medical, behavioral, social, and environmental factors, among others⁶.

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Positive health not only identifies health assets empirically based on determinants of health and illness⁹ but also goes beyond the state of not being ill to identify various other health assets, such as biological, subjective, and functional health assets, by determining factors that may be predictors of health. Because health behaviors may affect health assets and vice versa, the positive health model principally considers health behaviors as critical potential mediators between health assets and positive health⁹. Certainly, to be considered truly effective, these asset-based approaches must work together in an integrated manner at these specified levels to create health. This salutogenic perspective, coined by Aaron Antonovsky, focuses on the generation and promotion of health, whereas a pathogenetic perspective focuses on the generation of diseases^{1,10}.

In line with the growing interest in health assets, there is an increasing need to find well-established evidence to develop health policies that offer ways for people to maintain good health². In health economics, health is measured as health-related utility using instruments weighted by population preferences^{11,12}. Thus, a comprehensive valuation of health assets can potentially encourage assessments of the impacts and values of investments in social interventions and policies that are intended to promote health and tackle health inequalities in areas with notable differences across people of different socioeconomic statuses (SES)⁸. In other words, the valuation of health assets can capture health-related costs and benefits based on the cumulative effects of investments in health over a long period and can provide additional all-encompassing insights on health and health inequalities from different stakeholders' perspectives¹³.

Good health engages people in work and social life and creates human and social value, recently, health can be viewed as an investment-worthy asset for individuals and society to thrive^{2,13}. As health can be perceived as an asset worth investing in and, thus, like gross domestic product (GDP), the valuation of health assets might provide additional insight into the comprehensive value of health that can be used in making individual or political decisions to promote health or reduce health inequality^{1,2,13}. We measured the economic value of health assets¹⁴.

Our previous study showed that current health asset valuation (HAV) was independently associated positively with subjective well-being, coping strategy, and health habits, and negatively with depression. There is no gold standard for the valuation of health assets. In this study, we defined HAV as the measurement of the value of health assets by evaluating current health status with subjective indicators and annual income to motivate individuals to take care of their health and to address health inequalities among vulnerable populations, unlike the economic value of health assets, meaning the economic gain generated by working longer with a healthy body to be used by businesses and governments to measure the socioeconomic performance of health-related businesses. Even though the new momentary value of health can be used in making individual or political decisions about improving health or reducing health inequality, few studies examine perceptions of health assets and their valuations among the general population. Therefore, we aim to investigate perceptions and implication of HAV among South Korean employees.

The findings can serve as evidence and help individuals, researchers, politicians, and policymakers reconceptualize the notion of HAV⁶.

Methods

Participants and procedures

This cross-sectional study was conducted in 2024. The survey link was distributed to 4,452 eligible employees from the labor and management sectors in South Korea. The inclusion criteria were as follows: (1) age between their 20s and their 40s and (2) ability to understand the objectives of the survey. The exclusion criteria were as follows: (1) people who could not understand spoken or written Korean and (2) those who had difficulty understanding the contents of the questionnaire due to vision problems. Finally, 1,000 employees, who ranged in age from their 20s to their 40s, and their places of residence spanned 17 major cities and local districts in South Korea responded to the self-reported questionnaire.

This study was reviewed and approved by the Institutional Review Board (IRB) of XXX. Participants who gave voluntary informed consent were only considered as subjects of the study and allowed to proceed with the study. All methods were carried out following relevant guidelines and regulations. Participants who gave voluntary informed consent were only considered as subjects of the study and allowed to proceed with the study.

Measurement

As study outcomes, we included a survey item on health asset valuation, and the responses were given on a four-point Likert scale, with one, two, three, and four corresponding to "Not at all," "Disagree," "Agree," and "Very much agree," respectively. Perceptions and implication of the health asset valuation were asked as "How much do you agree with the following points for health asset valuation?" (Fig. 1). Each item for the valuation of health assets involved the following considerations: (1) considering health assets to have an economic value, (2) considering a systematic evaluation of health assets to be helpful for health management, (3) willing to continuously use programs that assess the value of health assets, (4) willing to participate in personalized health improvement activities that increase the value of health assets, (5) willing to pay for a health improvement program based on the value of health assets.

To measure the influences of different aspects of self-rated health on health asset valuation¹⁴, we asked respondents to assess their health status using the 5 Health Status Questionnaire (5HSQ), to evaluate five domains: physical, mental, social, spiritual, and general health. The 5HSQ has been validated in several studies^{15–17}. The relevant questions are as follows. "Physical health is the state of normal physical strength, without any disease or injury. What do you think about your physical health status?" "Mental health is the state of being mentally stable and overcoming stress. What do you think about your mental health status?" "Social health is the state of having good social relationships and carrying out one's work properly. What do you think about your social health status?" "Spiritual health is the state of adding meaning to life through volunteering, religious experiences, and

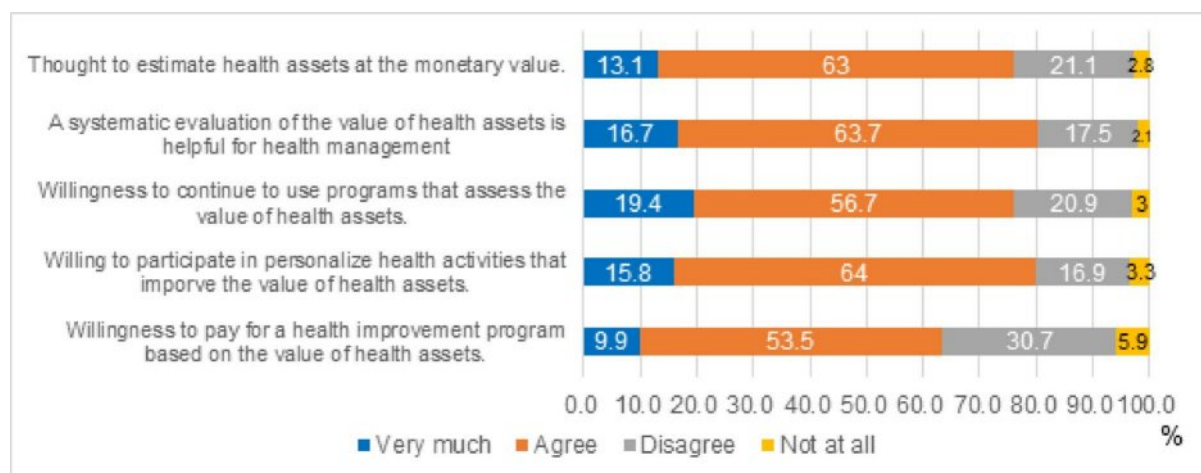


Fig. 1. Perceptions of the valuation of health assets among Korean employees (N = 1,000).

meditation. What do you think about your spiritual health status?" "Considering your physical, mental, social, and spiritual health status, what do you think about your health status in general?" These items were rated on a five-point Likert scale, with one, two, three, four, and five corresponding to "Excellent," "Very good," "Good," "Poor," and "Very poor," respectively¹⁵. In addition to the measurement of self-rated health status, we asked for information on sociodemographic characteristics (age, sex, marital status, final education, work location, monthly household income, enterprise type, and Industry) collected through a self-reported questionnaire.

Statistical analyses

For statistical analyses, self-rated health on health asset valuation was converted into binary variables as follows: (1) perceptions of the health asset valuation [Disagree to Not at all (reference) vs. Agree to Very much agree], (2) self-rated health status [Poor and Very poor (reference) vs. Average to Poor including Good, Very good to Excellent]. Responses of sociodemographic characteristics were also transformed into variables as follows: (1) education [high school and below (reference) vs. college and above], (2) monthly household income [$\geq$ 3000 U.S. dollars (reference) vs. < 3000 U.S. dollars ($\approx$ 3rd quintile of monthly average income of households (with one or more family member) in the Republic of Korea, (3) enterprise type [small and medium (reference) vs. large], (4) industry type [primary and secondary (reference) vs. tertiary].

To analyze this study, we first examine descriptive statistics for the sociodemographic variables, providing the numbers and percentages of participants corresponding to each socioeconomic factor. We then perform a univariate analysis to measure the correlation between socio-demographic variables and various aspects of health asset valuation. We also identified the odds ratios (ORs) of positive attitudes toward health assets using univariate logistic regression analyses to evaluate the impacts of the five self-rated health status categories (i.e., physical, mental, social, spiritual, and general health) on health assets. The purpose of these univariate analyses is to identify meaningful factors in the existing data and draw implications. Thus, the univariate analyses are a necessary step for building the multivariate analysis model regardless of the significance of the individual factors. Finally, based on the results of the univariate analyses, we perform a multiple logistic regression analysis of sociodemographic characteristics and self-rated health status, which are significantly associated with HAV, to examine whether they are independently associated with positive attitudes toward each of the five HAV.

In all of the analyses, we report ORs with 95% confidence intervals (CIs) as the results, and we define statistical significance as a two-sided *P*-value that is less than 0.05. To determine what predictors end up in our model, we conduct a hierarchical and stepwise analytical approach for factors with significant associations in the univariate analyses to identify the independent variables that best predict participants' attitudes toward HAV. The final multivariate analysis results are considered meaningful. We used SAS 9.3 (SAS Institute Inc., Cary, NC, USA) for all analyses.

Ethics approval and consent to participate

Our study was reviewed and approved by the Institutional Review Board (IRB) of the Seoul National University Hospital [SNUH; IRB No. E-2401-129-1505]. Participants who gave voluntary informed consent were only considered as subjects of the study and allowed to proceed with the study. All methods were carried out in accordance with relevant guidelines and regulations.

Informed consent

Participants who gave voluntary informed consent were only considered as subjects of the study and allowed to proceed with the study.

Results

Perceptions of the health asset valuation

Most respondents agree on estimating the economic value of health assets (76.1%) and using the valuation of health assets to facilitate health management (80.4%). More than 70% of participants are willing to use programs that assess the value of health assets or participate in personalized activities to improve the value of health assets. About two out of three (63.4%) are willing to pay for health improvement programs based on the values of their health assets (Fig. 1).

Relationships of sociodemographic characteristics and health status with positive perceptions of health asset valuations: univariate logistic analysis

Tables 1 and 2 show the associations of sociodemographic characteristics and health status with positive attitudes toward each of the five health asset valuations. Age status is associated with the willingness to continuously use programs that assess the values of health assets. Sex status is associated with the willingness to pay for a health improvement program based on the value of health assets. Enterprise type is statistically significantly associated with two of the willingness categories for health asset valuations. Marital status is associated with the willingness to continuously use programs that assess the values of health assets. Having a higher monthly income is positively associated with three of the willingness categories for health asset valuations and systematic evaluation of the value of health assets is helpful for health management (Table 1).

Several types of health status are more likely to influence attitudes toward health asset valuations. Having a good physical health status and mental health status is associated with a willingness to pay more for health improvement programs. Good social health status is associated with considering a systematic evaluation of health assets to be helpful for health management. Lastly, spiritual health statuses are significantly associated with all health asset valuations (Table 2).

Multivariate logistic regression model for factors associated with perceptions of health asset valuations

The multivariate logistic regression model shows that higher education participants have more positive attitudes toward participating in personalized health improvement activities that increase the value of health assets (adjusted OR [aOR] 2.21, 95% CI 1.35–3.61). Participants with higher income tend to have more positive attitudes toward health assets, believing that they have economic value (aOR 1.36, 95% CI 1.01–1.82), considering systematic evaluation of health assets to be helpful for health management (aOR 1.53, 95% CI 1.11–2.09), and showing a willingness to continuously use programs that assess the value of health assets (aOR 1.98, 95% CI 1.37–2.85). Among the health status factors, good mental health is positively associated with a willingness to pay for health improvement programs (aOR 1.42, 95% CI 1.07–1.89). Finally, good spiritual health increases the likelihood of viewing health assets as having economic value (aOR 1.45, 95% CI 1.05–2), considering the systematic evaluation of health assets as helpful for health management (aOR 1.42, 95% CI 1.01–2.01), and being willing to pay for health improvement programs based on the value of health assets (aOR 1.51, 95% CI 1.11–2.06). The variables ‘age’, ‘sex’, ‘company type’, and ‘marital status’, physical and social health status lost significant independence in the multivariate logistic regression analysis (Table 3).

Discussion

Our study suggests that most Korean employees have accepted health asset valuations based on the theory of salutogenesis and the idea of positive health. They have perceived that the valuation of health assets aids in maintaining health at the individual level, and they have expressed a willingness to engage in programs that assess and enhance the value of health assets¹⁴.

From the previous systematic review, Hornby-Turner et al. showed that higher self-rated health statuses are associated with better health among older people. Based on this finding, it is important to find ways to provide educational and financial resources; strengthen people’s social networks with family, friends, and connections in their communities; and increase older people’s engagement in social activities to continuously support their health assets, which can consequently lead to better health outcomes⁵. Another study shows that higher levels of self-reported health are also associated with faster GDP growth in the UK¹⁸. GDP is “the standard measure of the value added created through the production of goods and services in a country during a certain period”⁹. From an economic perspective, population health can significantly impact national productivity and GDP².

Based on the results of this study, it is necessary to develop evaluative frameworks to assess the potential causal effects of health assets on health status and identify the most appropriate measures to promote effective implementation strategies for health assets^{5,6,9}. In particular, evaluative frameworks for health assets need to assess not only short-term cost-effective benefits for immediate political decisions but also long-term consequences^{2,19}. The Korean employees support the idea that health assets have economic value and that valuations of health assets can facilitate health management. Most people are willing to continue to use programs that assess the value of health assets, participate in personalized health improvement activities that increase the value of health assets, and pay for health improvement programs based on the values of health assets. These findings highlight the various possibilities of personalized health management strategies based on valuations of health assets at the individual or national levels.

Active decisions and actions by the government and employers influence health outcomes because living and working conditions partly determine health. Thus, governments and employers should recognize health as an asset worth investing in². These findings about HAV suggest that individuals, researchers, and policymakers should consider promoting health and tackling health inequalities⁶. Combined with traditional ways of

Sociodemographic characteristics	Groups	N (%)	Consider health assets to have an economic value OR (95% CI) (ref=disagree)*	Consider a systematic evaluation of health assets to be helpful for health management OR (95% CI) (ref=disagree)*	Willing to continuously use programs that assess the value of health assets OR (95% CI) (ref=disagree)*	Willing to participate in personalized health improvement activities that increase the value of health assets OR (95% CI) (ref=disagree)*	Willing to pay for a health improvement program based on the value of health assets OR (95% CI) (ref=disagree)*
Sex	Female	400	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Male	600	0.84 (0.62–1.13)	0.96 (0.7–1.33)	1.16 (0.86–1.55)	0.84 (0.61–1.15)	1.37 (1.05–1.78)
Age	35–49 years old	511	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	20–35 years old	489	0.8 (0.6–1.07)	0.83 (0.61–1.14)	0.7 (0.52–0.94)	0.8 (0.58–1.08)	0.93 (0.72–1.21)
Marital Status	Single/widowed/divorced	574	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Married or cohabiting	426	1.22 (0.91–1.64)	1.32 (0.96–1.82)	1.51 (1.11–2.04)	1.14 (0.83–1.56)	1.03 (0.8–1.34)
Education Level	Highschool and below	128	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	College and above	872	1.29 (0.85–1.96)	1.17 (0.75–1.84)	1.47 (0.98–2.21)	2.08 (1.38–3.13)	1.17 (0.8–1.71)
Work Location	Rural	162	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Urban	838	1.23 (0.84–1.8)	1.06 (0.7–1.61)	1.23 (0.84–1.8)	0.72 (0.46–1.13)	1.16 (0.82–1.64)
Income	< 3000\$	590	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	≥ 3000\$	410	1.37 (1.02–1.84)	1.54 (1.12–2.1)	1.67 (1.25–2.24)	1.47 (1.08–2.08)	1.17 (0.9–1.52)
Enterprise type	Small and medium	422	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Large	258	1.02 (0.71–1.48)	1.3 (0.87–1.94)	1.54 (1.05–2.27)	1.51 (1.02–2.24)	1.16 (0.84–1.6)
Industry	Primary and secondary	365	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Tertiary	635	1.23 (0.91–1.65)	1.04 (0.75–1.44)	1.15 (0.85–1.54)	1.28 (0.93–1.75)	1.23 (0.95–1.61)

Table 1. Univariate analysis of perceived health asset valuation based on sociodemographic characteristics. OR Odds ratio. *The responses were given on a four-point Likert scale (disagree not at all, disagree, agree, and very much agree). These responses were divided into “disagree (disagree not at all, disagree)” and “agree (agree, and very much agree)”.

Health status	Groups	Consider health assets to have an economic value OR (95% CI) (ref=disagree)*	Consider a systematic evaluation of health assets to be helpful for health management OR (95% CI) (ref=disagree)*	Willing to continuously use programs that assess the value of health assets OR (95% CI) (ref=disagree)*	Willing to participate in personalized health improvement activities that increase the value of health assets OR (95% CI) (ref=disagree)*	Willing to pay for a health improvement program based on the value of health assets OR (95% CI) (ref=disagree)*
Physical†	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.11 (0.81–1.52)	0.79 (0.56–1.12)	1.17 (0.86–1.59)	1.24 (0.89–1.72)	1.51 (1.15–1.99)
Mental†	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.16 (0.86–1.58)	1.17 (0.84–1.62)	1.13 (0.84–1.54)	1.2 (0.87–1.65)	1.6 (1.23–2.1)
Social†	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.08 (0.77–1.52)	1.47 (1.03–2.09)	0.98 (0.69–1.39)	1.22 (0.85–1.75)	1.16 (0.85–1.57)
Spiritual†	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.46 (1.06–2.02)	1.44 (1.02–2.03)	1.46 (1.06–2.02)	1.45 (1.03–2.04)	1.71 (1.28–2.29)
Total	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.22 (0.88–1.68)	1.31 (0.93–1.85)	1.22 (0.88–1.68)	1.32 (0.94–1.85)	1.28 (0.96–1.7)

Table 2. Univariate Analysis of Perceived Health Asset Valuation Depending on Perceptions of Self-Rated Health Status. *OR* Odds ratio. *The responses were given on a four-point Likert scale (disagree not at all, disagree, agree, and very much agree). These responses were divided into “disagree (disagree not at all, disagree)” and “agree (agree, and very much agree)”. †These items were rated on a five-point Likert scale, with one, two, three, four, and five corresponding to “Excellent,” “Very good,” “Good,” “Poor,” and “Very poor,” respectively. These responses were divided into “Good to Very poor” and “Very good to Excellent”.

Sociodemographic characteristics/ self-rated health status	Groups	Consider health assets to have an economic value OR (95% CI) (ref=disagree)*	Consider a systematic evaluation of health assets to be helpful for health management OR (95% CI) (ref=disagree)*	Willing to continuously use programs that assess the value of health assets OR (95% CI) (ref=disagree)*	Willing to participate in personalized health improvement activities that increase the value of health assets OR (95% CI) (ref=disagree)*	Willing to pay for a health improvement program based on the value of health assets OR (95% CI) (ref=disagree)*
Age	35<=			1.00 (ref)		
	35>			NS		
Sex	Female					1.00 (ref)
	Male					NS
Company Type	Small and medium enterprises			1.00 (ref)	1.00 (ref)	
	Large Enterprises			NS	NS	
Marital Status	Single/widowed/divorced			1.00 (ref)		
	Married or cohabiting			NS		
Education Level	Highschool and below				1.00 (ref)	
	College and above				2.21 (1.35–3.61)	
Income	<3000\$	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	
	≥3000\$	1.36 (1.01–1.82)	1.53 (1.11–2.09)	1.98 (1.37–2.85)	NS	
Physical [†]	Poor to very poor					1.00 (ref)
	Good to excellent					NS
Mental [†]	Poor to very poor					1.00 (ref)
	Good to excellent					1.42 (1.07–1.89)
Social [†]	Poor to very poor		1.00 (ref)			
	Good to excellent		NS			
Spiritual [†]	Poor to very poor	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)	1.00 (ref)
	Good to excellent	1.45 (1.05–2.05)	1.42 (1.01–2.01)	NS	NS	1.51 (1.11–2.06)

Table 3. Multivariate logistic regression of the perceived health asset valuation*. *ref* reference *aOR* adjusted odds ratio, *NS* non-significant. *The responses were given on a four-point Likert scale (disagree not at all, disagree, agree, and very much agree). These responses were divided into “disagree (disagree not at all, disagree)” and “agree (agree, and very much agree)”. †These items were rated on a five-point Likert scale, with one, two, three, four, and five corresponding to “Excellent,” “Very good,” “Good,” “Poor,” and “Very poor,” respectively. These responses were divided into “Good to Very poor” and “Very good to Excellent”. ‡Variables of each socioeconomic status (SES) and health status that did not show significant correlations with perceived health asset valuation in the univariate analysis are denoted as ‘-’, and were consequently excluded from the model.

measuring needs, good HAV mapping can provide a multidimensional approach for measuring the effectiveness of programs and initiatives designed to promote population health and reduce health inequalities⁶.

HAV can also reveal the assets held by individuals, communities, and the country and highlight their unique strengths with an effective health asset mapping, as HAV may empower health management through various effective health programs and can also help to measure the effectiveness of these programs. Therefore, HAV may be a promising approach based on salutogenic indicators⁶. However, our findings suggest that more research on theoretical and evaluative issues related to HAV is needed to convince individuals and policymakers of their necessity for promoting health and tackling health inequalities^{1,8}. Given the importance of health in daily life, HAV can help in understanding the mechanisms by which health programs and policies promote health and tackle health inequalities. Understanding these mechanisms can allow the general public to nudge policymakers in the direction of developing policies that would encourage and promote the health and well-being of the population, as well as economic growth^{2,8}.

To satisfy the needs of different stakeholders, the valuation framework for health assets and the measurement of their impacts on health outcomes may need a single and integrated value model to assess the effectiveness of interventions and policies^{6,8,20}. The next challenge is to develop methods that apply health asset valuations to the general public to examine their validity and usefulness as an asset-based approach to evidence-based health policy⁸. These approaches can provide evidence-based estimates for short-term and long-term benefits of health investments at the individual, social, and national levels^{2,6,8}.

Our multivariate logistic regression model shows that participants with higher socio-economic status and health tend to have more positive attitudes toward the perception and implication of HAV. They might believe the HAV to be helpful for personalized health management and use and pay programs that improve health. Especially, participants with higher good mental or spiritual health are willing to pay for health improvement programs based on the HAV. These findings suggest the possibility of the health management program based on the HAV in the healthcare field.

Limitations

However, this study also has several limitations. First, these findings are based on the Korean employees and may not apply to other populations. Second, participants' low response rates and excluding people with hearing or vision problems and who could not speak Korean may not be generalizable to other populations even though the survey was conducted by an experienced interviewer. Third, although almost all of the survey respondents agreed with estimating and utilizing valuations of health assets, we cannot identify any gaps between attitudes and behaviors. Fourth, participants' knowledge of HAV may vary, thereby limiting the interpretability of the survey. Further studies are needed to examine the associations between knowledge of and attitudes toward HAV. Fifth, our study asked subjects questions about HAV but they didn't give much thought to the question and didn't clearly understand what was being said. Finally, our study did not show the difference between health asset valuation and health valuation. The difference should be identified by future research.

Conclusion

This study suggests the potential usefulness of health asset valuations to promote health and identify individuals with an interest in their health asset valuations, with the aim of contributing to health promotion.

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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Author contributions

Y.H.Y., the senior author, was responsible for the review's Y.H.Y., J.S., J.R. and S.Y. made contributions to the design of the study. J.S. and W.L. conducted the statistical analysis. Y.H.Y. drafted the manuscript with substantial contributions from J.S., W.L., J.R. and S.Y. All authors including the Y.H.Y., J.S., W.L., J.R. and S.Y. substantially contributed to the interpretation of data, edited the manuscript and revised it critically for important intellectual content. All authors read and approved the final manuscript.

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Declarations

Competing interests

The authors declare no competing interests.

Additional information

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