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Perceptions of the General Public About Health-related Quality of Life and the EQ-5D Questionnaire: A Qualitative Study in Korea

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Objectives: The aim of this qualitative study was to investigate how members of the general public in Korea interpret the concept of health, and which dimensions of health are most important to them. We also explored their perceptions of the EuroQoL 5-Dimension (EQ-5D), including the EuroQoL visual analogue scale (EQ-VAS).

Methods: We conducted face-to-face, in-depth interviews with 20 individuals from the general population, using a semi-structured interview guide. Content analysis was performed with verbatim transcripts and field notes to identify codes and categorize them according to their similarities and associations.

Results: In total, 734 different codes were derived and classified into 4 categories. Participants cited the importance of both the mental and physical aspects of health, although they emphasized that the physical aspects appeared to play a larger role in their conceptualization of health. Participants noted that the EQ-5D has the advantage of being composed of 5 dimensions that are simple and contain both physical and mental areas necessary to describe health. However, some of them mentioned the need to add more dimensions of mental health and social health. Participants showed great satisfaction with the visually well-presented EQ-VAS. However, participants opined that the EQ-VAS scores might not be comparable across respondents because of different ways of responding to the scale.

Conclusions: While physical health is a fundamental aspect of health, mental and social aspects are also important to Koreans. The content of the EQ-5D broadly matched the attributes of health considered important by Koreans.

Key words: Quality of life, In-depth interviews, Qualitative research, Republic of Korea

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INTRODUCTION

Patient-reported assessments of their own health or health-related quality of life (HRQoL) are increasingly recognized as important outcomes in clinical research [1]. Furthermore, when used in combination with survival data, some measures of health and HRQoL, such as the EuroQoL 5-Dimension (EQ-5D), can be used to calculate quality-adjusted life years or quality-adjusted life expectancy, which are used in decision-

making about resource allocation for healthcare interventions and programs [2,3]. This type of measure is likely to become more important in the future, given the growing emphasis in healthcare on listening to patients' voices [4].

Various researchers and groups are trying to define and measure HRQoL in accordance with the World Health Organization's definition of health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" [5]. In general, HRQoL is regarded as a multi-dimensional, subjective, and dynamic concept [6,7]. Numerous instruments, including generic and disease-specific instruments, have been developed and utilized to quantify HRQoL [8]. HRQoL instruments should be valid, reliable, and feasible, and it is important for researchers to choose appropriate instruments to measure HRQoL [9].

Among HRQoL instruments, the EQ-5D is the most commonly used generic preference-based measure of HRQoL [10]. The EQ-5D is composed of 5 dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, with either 3 levels or 5 levels of severity. The EQ-5D has solid evidence for its validity and reliability in both the general public and in many different health conditions [11-13].

As the EQ-5D was initially developed in European settings, it may not fully reflect perceptions of HRQoL among Asian populations, including Koreans. There could be culture-specific dimensions of HRQoL that are not included in the EQ-5D. For example, a study in Thailand found additional health dimensions that might improve the performance of EQ-5D [14,15]. Therefore, it is necessary to examine whether the EQ-5D is adequate for covering people's perceptions of HRQoL in different cultures; however, few studies have been conducted to understand the conceptualization of HRQoL and the adequacy of EQ-5D in Asian countries, including Korea.

We performed a qualitative study to determine how members of the general public in Korea understand and conceptualize health and to investigate which dimensions of health are important to them. In addition, we explored Koreans' perceptions of the EQ-5D questionnaire.

METHODS

We conducted in-depth interviews to explore the perceptions of the general public in Korea about health and to determine its important dimensions. The Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist was used as a guide when developing, conducting, and analyzing these in-depth interviews [16]. We explained the objectives and procedures of the in-depth interviews to the study participants and obtained informed consent from them prior to study participation.

Research Team

The research team consisted of 5 members. All members had prior experience with research on HRQoL. Two of the Korean researchers (JP and MO) had participated in and published several qualitative studies.

Research Participants

In total, 22 participants were interviewed in-depth, and two of them facilitated the development of the in-depth interview guide for the research. In due course, 20 in-depth interviews were completed. One author (JP) recruited the participants through purposive sampling. The researchers confirmed that reflexivity (i.e., the likelihood of research participants responding as the researchers intended) would be relatively unlikely to occur considering the purpose of the research. No participants dropped out.

In-depth Interview Procedure

The in-depth interviews were conducted in a quiet space (cafe, counseling room, or senior community center) or a participant's house, where only 1 researcher (JP) and the research participant were present. The researcher conducted the interviews according to a semi-structured interview guide. The guide was designed to elicit perceptions of health as a concept and how to measure health. First, perceptions of health were primarily explored by inquiring about the meaning of being healthy and health problems that have a large impact on quality of life. Second, the EuroQoL 5-Dimension 5-Level (EQ-5D-5L) questionnaire, including the EuroQoL visual analogue scale (EQ-VAS), was presented to participants for comments. Third, we probed participants for additional comments or questions. Each in-depth interview session lasted for 30 minutes to 1 hour, and every interview was recorded and transcribed for analysis.

Analysis

The audio-recorded in-depth interviews were transcribed verbatim. We analyzed the verbatim transcripts and field notes using content analysis [17]. Content analysis is a method that

enables researchers to discover important implications in in-depth interviews with established theories or perspectives, and to reinterpret them and conjecture meanings. Directive content analysis was applied to this research, as it facilitates the identification of deductive categories derived from previous research or publicly known theories [17].

One author (JP) read the transcribed data repeatedly and derived codes to capture key concepts and participants' thoughts. The codes were sorted into categories based on the similarities and associations between codes. The codes and their categories were reconfirmed and modified by another author (MO). All authors thought that data saturation was achieved.

Research Validity

We used the 4 criteria proposed by Guba and Lincoln [18] to ensure the validity of the study. For the truth value, 1 participant confirmed that her experiences were well reflected in the table of categorization results. In addition, applicability was assessed by 1 member of the general public who did not participate in the study. She was interviewed using the original interview guide and confirmed that the categorization results contained her opinion well. Neutrality was achieved through discussions among researchers (JP, MO) about preconceived notions about the research topic before starting the study. Furthermore, during the research process, we tried to minimize our risk of prejudice through regular discussions. Lastly, consistency was ensured through a detailed presentation of the entire course of this study.

Ethics Statement

This study was approved by the Institutional Review Board of Asan Medical Center (S2017-2125-0001). We explained the objectives and procedures of interviews to the study participants and obtained informed consent from them prior to study participation. Each participant received a reward of 30 000 Korean won.

RESULTS

Demographic Characteristics

The characteristics of the 20 participants are shown in Table 1. Ten of the participants were female, and 10 were male. There were 8 people who had completed high school, 7 with an undergraduate degree, and 5 with a graduate degree. There were 7 participants with diseases and 13 participants with no known

Table 1. Characteristics of the participants

No.	Sex	Age group	Educational level	Disease	Address
1	Female	40s	College or above	-	Urban area
2	Male	70s	High school or below	Prostate cancer, cerebral infarction	Urban area
3	Female	20s	High school or below	Panic disorder	Urban area
4	Male	20s	High school or below	-	Urban area
5	Female	20s	College or above	-	Urban area
6	Female	20s	College or above	-	Urban area
7	Female	30s	High school or below	-	Rural area
8	Male	40s	College or above	-	Urban area
9	Male	50s	College or above	-	Urban area
10	Male	50s	College or above	-	Urban area
11	Male	40s	College or above	-	Urban area
12	Female	50s	College or above	Parkinsonism	Urban area
13	Female	50s	High school or below	Breast cancer	Urban area
14	Male	40s	High school or below	-	Urban area
15	Female	50s	College or above	Breast cancer	Urban area
16	Female	50s	College or above	Kidney disease	Urban area
17	Female	60s	High school or below	-	Rural area
18	Male	70s	High school or below	Arthritis	Rural area
19	Male	60s	College or above	-	Rural area
20	Male	40s	College or above	-	Urban area

Table 2. Categories and subcategories from the analysis

Category	Subcategory
1. Health definition and conception	1-1. Definition and characteristics of "being healthy"
	1-2. Awareness of one's and others' health
2. Significant factors in health	2-1. Health difficulties affecting life overall
	2-2. The most fearful health problems that affect the quality of life
3. Perception and opinions on EQ-5D-5L	3-1. Perception of EQ-5D-5L questionnaire
	3-2. Opinions on EQ-5D-5L dimensions
4. Perception and opinions on EQ-VAS	4-1. Perception of EQ-VAS questionnaire
	4-2. Opinions on EQ-VAS scoring standard
	4-3. Experience and recognition of health status via EQ-VAS questionnaire

EQ-5D-5L, EuroQoL 5-Dimension 5-Level; EQ-VAS, EuroQoL visual analogue scale.

disease. Sixteen participants resided in urban areas, and 4 participants in rural areas. Five participants were in their 30s or younger, 5 in their 40s, 6 in their 50s, and 4 in their 60s or older.

Identified Concepts

A total of 734 codes were derived from the analysis and categorized into the themes of health definition and recognition, significant factors in health, perceptions and opinions of the EQ-5D-5L descriptive system, and perceptions and opinions of the EQ-VAS. The results of the analysis are shown in Table 2, and the main content of each category is described below.

Health definition and conception

Definition and characteristics of "being healthy"

Some participants defined "being healthy" as an abstract concept, and most provided concrete descriptions. The ones who provided an abstract definition explained being healthy as an ability to realize their desires, including avoidance of physical and mental illnesses.

> *Interviewer: What does "being healthy" mean to you?*
> *Participant 1: In a state where I can freely do what I want without a hospital visit.*
> *Interviewer: What comes to mind when you think about the characteristics of health?*
> *Participant 1: Being able to actively move my body and eat what I want and do what I want.*

> *Interviewer: What does "being healthy" mean to you?*
> *Participant 9: Just a state where one can do what one wants. … … In the mental aspect, it means acting with common sense and judging correctly. Physically, it is a state in which you can do what you want.*

Most participants presented a concrete definition of health, and most of those definitions were limited to physical and mental aspects. Specifically, the physical aspect referred to the absence of disease or daily life problems. The mental aspect meant being able to make rational decisions. An example was crossing a crosswalk when a crosswalk light is green. Moreover, some participants included not only the physical and mental aspects, but also the social aspect in their definition of "being healthy"—that is, living without conflicts in personal relationships.

> *Interviewer: What does it mean to be healthy?*
> *Participant 4: First, you are not sick. Bodily or physically. There may be some spiritual things, but a physically healthy state came right into my head as soon as I heard the word.*

> *Interviewer: What does "being healthy" mean to you?*
> *Participant 6: In my perspective, being healthy means that there are no problems detected during a health checkup; that is I receive a good result, and I don't experience inconvenience in my daily life.*

Differences in the characterization of "being healthy" were related to the place of residence. Most participants from urban areas gave responses that encompassed the physical and mental aspects or the subjectivity of life in the definition. However, all participants from rural areas responded in consideration of the physical aspect only. In particular, 3 of them defined it as "no obstacles when working on crop fields," "walking actively well," and "walking proudly without any pains in the arms and legs."

> *Interviewer: What does "being healthy" mean to you?*
> *Participant 9-2: If you aren't sick, I think you are healthy. They say if your whole body is not in pain, then you are healthy, but working on the farm, it makes your arms hurt really bad, and you get super tired.*

Awareness of one's and others' health

The majority of participants considered the physical aspect as a high-priority criterion to judge their health status. For them, good health was perceived as an absence of physical illness and the presence of physical strength, and was achieved through physical exercise. In contrast, they perceived poor health to be the result of a physical illness. A minority also judged their health condition based on mental and social as-

pects. One said that he felt that he was a healthy person because he viewed himself as a socially needed person.

> *Interviewer: Sir, do you consider yourself a healthy person?*
> *Participant 9: I am very healthy.*
> *Interviewer: What makes you say that you are very healthy?*
> *Participant 9: For the mental part, I can make logical judgments, and for the physical part, I do almost everything that I want to do, although I feel a bit of pain because of my illness.*

> *Interviewer: Then, do you think you are a healthy person?*
> *Participant 11: Yes, I do.*
> *Researcher: What is the reason behind it?*
> *Participant 11: That's related to my occupation and my view on the value of life, but first, I think I need to be a useful person: A person who is needed by the country or society.*

Some participants mentioned that when judging whether someone else is healthy, they heavily considered the mental aspect. For the physical aspect, however, they did not offer specific examples. Instead, they stated that the physical appearance was the only criterion for the judgment of health status; that is, no visibility of disease meant an absence of disease regardless of the person's actual health. Meanwhile, participants provided detailed statements about mental health. For instance, some participants viewed a person who is exceedingly motivated for life, can make logical judgments, and has positive thoughts as healthy.

> *Participant 11: When I think of healthy people, I imagine people who relentlessly contemplate thoughts, mostly positive ones.*

> *Participant 8: To describe a healthy person, it's someone enthusiastic, who is very motivated and active. And a very active person. I feel like, "oh, that person is really healthy" when I see someone who can accomplish more tasks than I do under the same circumstances and time given.*

According to the participants, an unhealthy person is primarily characterized as someone who faces both physical and mental challenges. Some considered people with a physical disease or decreased stamina to be unhealthy. In terms of the mental aspect, loss of motivation to live and loss of vitality, as well as a sense of depression, were considered to characterize poor mental health.

> *Participant 9: An unhealthy person is someone, in the mental sense, who can't facilitate proper communication, and in the physical sense, someone who is always going to the hospital.*
> *Participant 12: There is no life in their face, and the person doesn't look like he or she has enough strength, and has a waddling walk… without bright eyes… First, I think that person would be slow. When I see no energy in someone's body, I feel like that person is not healthy.*

Significant factors in health

Health difficulties affecting life overall

Some participants talked about influences on overall life imposed by health issues: specific diseases, symptoms, and effects of certain illnesses and circumstances. In particular, some participants assumed that cancer would have an immense impact on life. Their apprehension would affect their family's well-being because cancer would hinder their ability to take care of the family and eventually burden them. Moreover, they were concerned about the effect of dementia and arthritis on their life. The fear of loss of control due to decreased cognition and mobility was initiated by the notion of dementia and arthritis, respectively.

> *Interviewer: How do you think dementia affects you?*
> *Participant 20: That I can't control myself.*
> *Interviewer: Are you afraid of that?*
> *Participant 20: Yes, it would control my life, so it would have an enormous effect.*

Some participants claimed that having an experience of bereavement with close family members and significant others would generate despair, depression, and anxiety, which would result in a loss of enthusiasm for life or a state of panic. They were also concerned about mental illness. One participant thought that if depression and anxiety become chronic, life would develop into an experience of helplessness and loneliness. Table 3 summarizes the diseases and symptoms that were reported to affect HRQoL.

> *Participant 15: It includes bereavement, bereavement of family, and friends. … It terrifies me when I think about what it would be like to lose my parents. The fear… It could also be about the fear of the absence of my parents… But I would struggle with feeling sorry and afraid for not fulfilling my role as their first daughter.*

Table 3. Diseases and symptoms that reduce health-related quality of life

Classification	Contents
Disease	Cancer, dementia, arthritis, mental disorders, hypertension, diabetes, Parkinson's disease, chronic obstructive disease, wrist tunnel syndrome, brain tumor, colorectal cancer, stroke, dysmenorrhea, kidney disease, visual impairment, and others
Symptoms and conditions	Anxiety initiates concerns about matters that have never happened, and it leads to interference with other work and makes one helpless in life
	One's overall life will be in a state of panic if one experiences bereavement of family members
	Sleep deprivation caused by cold feet leads to the development of dizziness, and a lack of meal consumption affects one's overall life
	Chronic fatigue is associated with lethargy and sensitivity, which affect life tremendously
	Despair induced by sudden accidents has a significant impact on life
	A hand injury is a crucial issue as it directly relates to financial matters by impacting one's ability to work
	A semi-permanent disability is likely to cause discomfort in daily life and psychological stress
	Having cancer would cause difficulty in maintaining family life and take care of a family
	It would affect life enormously if financial difficulties and interruptions of social interactions due to bankruptcy instigate depression
	Keeping persistent track of disease as a sick person has a significant influence on one's life
	Obesity has a significant impact on one's life, as it causes a drop in one's physical strength, which reduces one's self-esteem
	It is distressing to experience financial difficulties due to physical disabilities

Interviewer: How does depression affect you? In your life?
Participant 8: Depression is like being left alone - seeming to be left alone - so I feel like I'm getting more alienated, in such a lonely condition, and I feel myself change more over time.
Interviewer: … How does anxiety affect you, sir?
Participant 8: Anxiety always makes you worry about things that would never happen, so even things that seem to not happen in reality are just as likely to happen. So you make this assumption about "how do I deal with it and accept it?" I worry about worrying, and it gets bigger and bigger, until I can't do anything else. Those thoughts really interfere with what I have to do.

The most concerning health problems that affect the quality of life

Participants also frequently mentioned the influence of health problems on life overall. Dementia, however, was ranked first as the most concerning health problem and the most impactful factor on the quality of life.

Interviewer: What is the most frightening thing? Something that you wish would not happen?
Participant 19: The most frightening thing is dementia.
Researcher: Why is that, sir?
Participant 19: About dementia, it is a mental state where you, yourself, of course, can't be recognized… It gives people around you a hard time, and it is incurable once you get it. So, it is the most frightening one, and I never want to get it… Truly…

Interviewer: Why do you think dementia is the most frightening health problem?
Participant 11: It's because of an article I read recently. A woman has a husband with dementia, and she said he seems to live in another world. A husband who doesn't remember any of his past experiences... She would bathe him and care for him as she waited for his memories to come back from time to time. I think it's so heartbreaking and painful..

Perceptions and opinions on the EQ-5D-5L

Perceptions of the EQ-5D-5L questionnaire

All participants except 2 said that they had no difficulty understanding the items and responding to them. However, 1 participant felt that the questionnaire's dimension of anxiety and depression was ambiguous, and he had difficulty answering it. The other participant said that it was difficult to comprehend the intent of the questionnaire. Furthermore, most participants said they were familiar and comfortable with the response scale, and that the response options were clearly distinct from each other. However, some stated that the response options were extreme or ambiguous.

Interviewer: Did you have any difficulty answering this questionnaire?
Participant 6: Well… The four in the front were O.K., but the last was a bit ambiguous.
Interviewer: You mean the anxiety/depression part?
Participant 6: Yes.
Interviewer: What was a bit challenging?
Participant 6: Oh, I had to check my status once again, and then I marked the answer. So it was somewhat ambiguous.
Interviewer: Do you mean that it's a process that requires one more confirmation?
Participant 6: Yes.

Interviewer: As you can see, the responses consist of "no problems," "slight problems," "moderate problems," "severe problems," and "unable." What do you think about these five responses?
Participant 7: They seem fine to me. It is divided into stages, like a few, average, and severe… So it is easy to choose an answer because they are divided into stages.

Most participants stated that the EQ-5D-5L questionnaire described their health status adequately as it included the physical and mental aspects. However, some asserted that the 5 dimensions seemed too broad, and suggested that it would be necessary to subdivide the dimensions. Moreover, 1 participant said that it might not function adequately—that is, physical diseases may not be revealed externally—and the mental aspect is associated with internal issues, so it is difficult for others to judge.

Interviewer: This questionnaire is made up of five questions. Do you think it adequately reflects your health status?
Participant 5: Yes.
Interviewer: For what reason do you think so?
Participant 5: When you just look at it, it has all the psychological and active parts… In a broad sense…

Participant 6: I think it reflects the general areas. It doesn't go into a little more detail, though…
Interviewer: What makes you say that?
Participant 6: For example, for the psychological part, it could have not only anxiety and depression but also some other things… For the physical part, the sleep section or the mobility section could also have some specific areas like issues related to moving one's hands or feet, other than just walking. But it could work as a questionnaire if it asks about the general parts in a broad sense.

Researcher: Sir, do you think this questionnaire would be able to indicate the health status of people when you think about healthy or unhealthy people around you?
Participant 7: Yes.
Researcher: In what aspect do you think so?
Participant 7: First, because it can show an external part and internal part…

Researcher: Do you think that if people around you, regardless of their health status, complete this questionnaire, it will be able to reveal their health condition?
Participant 9: In some sense?
Researcher: Why is that?
Participant 9: I think people with illness could mark these options without revealing what they have… Even though they are diagnosed, they could do something like they experience no difficulty in walking and things like that.
Researcher: Are you saying that it is ambiguous in that respect?
Participant 9: And about mental health, there isn't a section where you can mark that bit of difference between how a person perceives his/her mental health and how another perceives his/her mental health.

The participants stated that the questionnaire was simple, as it consisted of five dimensions, and the dimensions on the physical and mental aspects were significant aspects to demonstrate health. Several participants, however, claimed that it would be impossible to disclose one's detailed health status using only the 5 dimensions, and pointed out that there were relatively few items for mental health. Therefore, they suggested adding other mental health-related items, as well as social relations and diet-related items.

Participant 4: Advantage? I am not too sure how the results will come out, but I guess the advantage is that you can easily do it (the questionnaire). People know their health today well, and I think it's convenient because you can just think simply and quickly to do it.

Interviewer: What should be improved here? Something that makes you say, "ah, this is a bit disappointing."
Participant 10: Relationships, because people are social animals…
Researcher: So you want a relationship domain to be included?
Participant 10: Yeah. Because I don't live solely by myself and people live within social relationships.

Opinions on EQ-5D-5L dimensions

Most participants cited usual activities as the most critical health dimension compared to mobility, self-care, pain/discomfort, and anxiety/depression. They considered that usual activities encompassed the rest of the dimensions. The participants who placed more weight on other dimensions took into account their definition of health and their current health condition. One participant with Parkinson's disease who was experiencing discomfort with his body movements regarded the mobility dimension as the most significant. At the same time, another who experienced distress with wrist and back pain that occurred while caring for children with disabilities chose the dimension of pain/discomfort. Another participant with panic disorder highlighted the dimension of anxiety/depression.

Interviewer: What is the essential feature of these five aspects to explain your health?
Participant 14: If you look at just a representative aspect, it will be usual activities.
Interviewer: Could you elaborate on it?
Participant 14: The fact that there is no difficulty in everyday life ... While walking without any difficulty represents only the health of one's legs, usual activities include everything - you might not be able to see, hear, or have arms… it could be more representative.

Interviewer: What is the essential feature of these five aspects to explain your health, ma'am?
Participant 7: My health? Pain.
Interviewer: Pain and discomfort? Why is it the most important feature?
Participant 7: Because I am experiencing it…

The participants designated the dimensions that were under their control as the least significant domains. For instance, they viewed self-care as a self-controllable area that could be influenced situationally. Moreover, they considered that anyone could experience anxiety/depression, and the severity is dependent on one's determination to manage it.

Interviewer: Ma'am, then what is the least important here? Is walking the least important? Self-care? Usual activities? Pain? Anxiety?
Participant 17: This is something that's a make-up-your-mind thing, so this one is the least important.
Researcher: Anxiety and depression?
Participant 17: Yeah.
Researcher: Why are anxiety and depression the least important?
Participant 17: They depend on how you make up your mind.

Perception and opinions on the EQ-VAS

Perception of the EQ-VAS questionnaire

Some participants stated that the concept of "today's health" was ambiguous or that it was difficult to express health using a numerical value when they were asked to complete the EQ-VAS. The majority of participants, however, stated that the EQ-VAS was visually clear, easy to understand, and not challenging to answer.

Interviewer: Did you have any difficulty understanding and answering this question?
Participant 7: No, I did not.

Researcher: Did you have any difficulty with these questions?
Participant 1: I think it was a little vague.
Researcher: What do you mean by being vague?
Participant 1: About how good or bad your health is. As it said "today," I vaguely gave 75 points, but I wasn't so sure where to set the standard… Anyway, that thing was sort of… I don't know where to put the standard.

Participants were highly satisfied with the visual aids of the EQ-VAS and its simplicity. The scale was thought to be an easy way to understand respondents' health condition based on their health on the day the instrument was administered. Participants commented that the thermometer-like figure could be viewed at a glance. The broad response scale from 0 points to 100 points was also considered an advantage, since it allowed respondents to define health and set a standard of health by themselves.

Interviewer: What's the benefit of this?
Participant 13: By doing it this way, rather than thinking like, "I am unconditionally healthy," I can think like, "I guess my score is this much?"

Participant 19: Well, first of all, the benefit is that we can clearly see it. There's a measure in height form right next to it, so you can sense it and see it.

As disadvantages, they thought that the answers of different respondents would be incomparable as respondents could use the scale in different ways. They were also not content with thinking of health as a single item. It was suggested that transforming the single form into a detailed breakdown could provide a better understanding of the respondent's health status.

Interviewer: What do you think is missing from this questionnaire as a whole?
Participant 3: Well ... One thing I wish it's included here is that, you know, it's asking about your health status. (In EQ-5D-5L) Various parts of health are described, but it sees health as a whole inclusive entity. So in some aspects, it could be good or bad, but I think it would be better if it was in a table format so that I can mark each part.
Interviewer: Oh, a little more variety? So there are ones with the mobility (in EQ-5D-5L) … and you wish there would be separate tables for other domains as well as a combined one, right?
Participant 3: Yes.

Opinions on the EQ-VAS scoring standard

The participants did not consider the 1-point unit in the process of assigning scores to their health status. Some explained that the scores were based on their "personality traits": they felt that the 1-point units were not compact, whereas the 5-point and 10-point units were familiar and neat.

> *Researcher: There were options of 81 points and 79 points, but why did you decide on 80 points?*
> *Participant 7: That's probably because of the personality thing.*
> *Researcher: Is it a personality trait? Do you prefer a simpler last digit?*
> *Participant 7: Yes.*
> *Researcher: So you did not consider 79 or 81?*
> *Participant 7: No, I did not consider it at all.*

Most participants reflected upon their physical discomforts, such as myalgia, headache, and severe ailments, when they scored their health status. Although physical discomfort may be associated with mental difficulties, they considered only physical discomfort when determining their scores. Nevertheless, some of them chose their scores in consideration of mental fatigue, depression, and mood state. Only a small number of them stated that their scores were selected based on a consideration of both physical and mental health status.

> *Participant 5: I did not feel well today, so I gave 70 points. I feel depressed. It feels like it has been going on for days.*

The participants had their own criteria for the health scores. They were asked about possible changes in their health status that would lead to a change in the scores they gave themselves. Most of them said that a 5-point increase would mean resolution of mental difficulties, and a 5-point decrease would indicate amplification in physical discomfort. In particular, they claimed that if the score increased by 5 points, it would demonstrate relief of anxiety, an increase in comfort and confidence, and consideration for others. Meanwhile, if the score decreased by 5 points, it would illustrate an increase in physical discomfort in an abstract manner, specifically in relation to athlete's foot, toothache, frequent sicknesses, and leg discomfort. They considered physical health as a priority when describing their health scores earlier. It was, however, discovered that mental areas accounted for a more significant percentage when participants reflected on health enhancement.

> *Interviewer: You gave it 70 points. If you increased your score by 5 points, what would be different from your current health status?*
> *Participant 5: I would feel a little better.*

> *Researcher: You gave 80 points for today's health status… but if you lowered it by 5 points to get 75, what kind of health status would it be?*
> *Participant 11: Whether athlete's foot recurs or a toothache comes from a cavity…*

Experience and recognition of health status via EQ-VAS

Most of the participants reported that they had previously experienced exceptionally healthy conditions. They remembered an outstandingly healthy status as being associated with the presence of relatively few physical and mental problems. Most of them remembered a specific time when they had a good health condition, and some recalled that they were extremely healthy in their early life.

> *Researcher: Have you ever experienced that 100 points?*
> *Participant 4: During high school vacation.*
> *Researcher: What happened during the high school vacation?*
> *Participant 4: Nothing happened. Nothing was happening, so I didn't have to think, nothing to be stressed about, and nothing to get tired of. I wasn't fatigued, which is the most important thing now, and I wasn't sick, and I wasn't stressed.*

> *Researcher: Then, did you ever enjoy that 100-point health status?*
> *Participant 12: I think it was when I raised my first child. … My husband once said I didn't really sleep, although I was so exhausted during that period. However, I didn't lose any weight… It was a bit tough to raise a child, but I was really enthusiastic.*

The "best imaginable health status" was considered unachievable by participants who had never experienced that state. One participant explained that he only experienced a nearly perfect health status due to his perfectionism. Another participant claimed that he had not experienced the best imaginable health condition because, during youth, good physical health occurred together with a less mature mental state, while the period of mental maturation coincided with weakened physical health.

> *Researcher: Have you ever enjoyed the full status of 100 points?*
> *Participant 8: No, I have not.*
> *Researcher: Why would you think so?*
> *Participant 8: Perfectionists can't enjoy 100. There are further lines of perfectionism waiting for you when you reach your initial goal line of perfectionism – another one and another one after that. That's why you always seek the next 100 points.*

DISCUSSION

We investigated how members of the general public in Korea understood and conceptualized health and investigate which dimensions of health were important for them. Furthermore, we explored the perceptions of Koreans about the EQ-5D questionnaire. The participants cited the importance of the mental and physical aspects, although they most strongly emphasized the physical aspects of health. In addition, physical health was identified as the most basic requirement for health, while it seems that a better HRQoL instrument would require improvement in mental and social aspects. Although the EQ-5D-5L and EQ-VAS are likely able to measure well the HRQoL of Koreans in general, the addition of items on the mental and social aspects could better reflect Koreans' HRQoL. This study makes a valuable contribution by advancing researchers' understanding of the meaning of HRQoL for the general public and providing insights into additional important dimensions of HRQoL apart from the dimensions of the EQ-5D-5L. Furthermore, its results are also helpful for interpreting data collected using the EQ-5D-5L and EQ-VAS.

Most of the members of the general public in this study opined that health is a multi-dimensional concept. They acknowledged that health not only consists of physical well-being, but should also encompass sound mental and social states [5]. Participants cited the importance of the mental and physical aspects, although they most strongly emphasized the physical aspects of health. It seems that, while physical health is the more basic requirement for health, good health or HRQoL encompasses mental and social aspects. In particular, participants highlighted interpersonal relationships with close others and one's social life in terms of their importance to health. We view these findings as being related to the cultural background of Korea, in which social relationships are considered valuable. Jeon et al. [19] reported that good relationships between parents and their children acted as an important factor ameliorating depressive symptoms in Koreans. Other Asian countries sharing Confucian ideals may also emphasize social relationships, including a belief in familism [20,21]. Indeed, social relationships are considered to be an important component of health in Singapore [22] and Thailand [14].

Participants of this study also emphasized mental status when they were asked about the aspects that could determine someone's health. For example, loss of motivation in life and vitality, and a sense of depression prompted an evaluation of someone as unhealthy. Furthermore, participants reported that a well-balanced mind represents a condition filled with enthusiasm for one's life, such as energy, goals, and desires, and not merely the absence of depression or anxiety. Through these findings, we determined that positive health dimensions, such as stamina and vitality, could be important for HRQoL in the Korean general population. Focusing only on disease, dysfunction, or disability is a one-sided way of looking at HRQoL [23]. Although positive health dimensions are not easy to measure [24], enhancing the positive aspects of HRQoL should be the ultimate goal of healthcare in accordance with the World Health Organization's definition of health.

This qualitative research also used in-depth interviews to study the EQ-5D-5L and the EQ-VAS, both of which are widely used to assess HRQoL. In Korea, two extensive population surveys use the EQ-5D as an HRQoL measurement tool: the Korean National Health and Nutrition Examination Survey and the Korean Community Health Survey [25,26]. Therefore, it is important that the EQ-5D provides an adequate assessment of HRQoL in the Korean population. The EQ-5D has only 5 dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Simplicity and understandability were suggested as the leading strengths of the instrument. Moreover, all EQ-5D dimensions were commented upon by at least some of the participants as important for describing their health, suggesting good relevance and content validity.

Although most participants commented that the EQ-5D was an adequate health status measure regarding the physical and mental aspects, the EQ-5D might be insufficient and could benefit from addition of dimensions that are deemed important by Koreans. Based on our analysis of participants' perceptions of health and their comments on the EQ-5D questionnaire, it seems that mental health and social relationships are broad dimensions that might be used to improve the adequacy of the instrument. In recent years, "bolt-on" studies have been conducted to improve the comprehensiveness or sensitivity of the EQ-5D by adding new dimensions. So far, this new

stream of research has focused on various patient populations [27-29]. However, it could also be applied to improve the EQ-5D in different cultures. Indeed, studies have been done in Thailand to explore additional dimensions that may make the EQ-5D a more comprehensive HRQoL measure for the Thai population [14,15].

Among the 5 dimensions of EQ-5D, most participants referred to "usual activities" as the most important dimension. They considered that usual activities encompassed the rest of the dimensions. Furthermore, they felt that the low score in the "usual activities" dimension would mean that a person had to rely on family members or relatives to live. In this respect, it is understandable that cancer or dementia is often referred to as a disease that may significantly affect HRQoL. Participants thought it would be a significant burden to their family members if they had cancer or dementia. It can be assumed that this is another characteristic of Koreans, for whom social relations, especially family relations, are important [20,21].

Participants were highly satisfied with the visual aid and simplicity of the EQ-VAS. However, they also pointed out that scores of different respondents may not be comparable and that it is difficult to express health as a single score. Moreover, participants perceived that the maximum score of the EQ-VAS, 100 points, is an ideal state of health they only experienced in early life; effectively, it was regarded as an unreachable state. Therefore, the general public could be reluctant to give 100 points for their HRQoL in the EQ-VAS, even if they had no problems in any of its 5 dimensions. Furthermore, the participants did not consider 1-point units in the process of assigning scores to their health status. They felt that 5-point and 10-point units were familiar and neat. Lastly, our study suggests that it might be beneficial to attach more labels to the EQ-VAS so that respondents can have more reference points to decide on their scores. Many of these findings are consistent with those from a similar study of 3 other Asian populations [30].

Qualitative research is recognized as a practical way to examine unknown issues, interpret subjective perceptions and situations that are challenging to quantify, and evaluate how people make behavior-related decisions. Merely using questionnaires provides neither an understanding of the underlying reasons for the choice of responses nor clues about the conception of HRQoL. Furthermore, qualitative methods enable the interpretation of ambiguous words, terms, and statements of respondents [31]. Although various studies on the HRQoL of patients with certain diseases using qualitative methods have been conducted [32,33], there has been a paucity of research among the general public or healthy people about HRQoL and generic HRQoL instruments. One of the major strengths of this study is that it was conducted to explore in-depth perceptions of the general public about HRQoL and the EQ-5D.

Despite the strengths of this qualitative study, its generalizability is limited due to the nature of qualitative research. Instead, it would be necessary to verify the hypotheses about HRQoL that we have established in this study. It may also be meaningful to conduct similar qualitative studies in other countries, Asian or Western, and to compare the results with each other.

CONCLUSION

Health is a multi-dimensional concept that compasses not only physical well-being, but also mental and social states, in Korea. While the EQ-5D and EQ-VAS were generally well accepted and perceived by Koreans as HRQoL measures, their acceptability and validity might be improved by some cultural adaptations. For the EQ-5D, adding items related to social relationships and mental health might make it more comprehensive for measuring the critical dimensions of HRQoL in the Korean general population. The EQ-VAS could be enhanced by providing more reference points on the scale.

CONFLICT OF INTEREST

The authors have no conflicts of interest associated with the material presented in this paper.

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