ORIGINAL RESEARCH

# Differences in health and related factors among older working women, according to productive engagement types

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As human lifespans increase, with improved healthcare and declining birth rates, every society on Earth is aging rapidly in an unprecedented manner. According to the World Health Organization (WHO), by 2030, approximately 16.7% of the world's population will be over 60, and the aging population will grow even faster[1]. This brings several challenges at both the social and individual levels. Addressing the issues of an aging society requires a comprehensive approach that involves social policies, healthcare reforms, intergenerational understanding, and community support[2]. In particular, encouraging healthy aging is essential to solving challenges[3]. Terms like healthy aging, successful aging, active aging, and productive aging are multidimensional umbrella concepts used to describe the process of effectively adapting to the physical changes of aging and finding meaning and purpose in life[4-6].

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The activity theory assumes that activity is vital to well-being, defined as high-level quality of life, and stresses the importance of older people being active and socially engaged[7]. This theory emphasizes that well-being and successful aging, identifiable as happiness or life satisfaction, are reflected in old age by the extent to which the individual can maintain social roles and relationships[8]. According to the activity theory, the productive engagement of older people is a significant factor in successful aging. Older persons who engage in productive work have a higher level of personal control, and their activities can be fulfilling experiences that bolster meaning in later life[9, 10]. The willingness to be generative or to make a difference imbues life with meaning and can provide the stimulus to initiate and maintain health-promoting activities[11]. Thus, productive engagement may impact successful aging, economic stability, health-related quality of life, and health[9, 12, 13].

From a productive engagement standpoint, work can lead to the enrichment of family life. Work-to-family enrichment is based on the resource conservation theory, which assumes that individuals acquire, protect, and conserve resources[14]. Work-to-family enrichment implies that the resources gained from work roles enhance family roles[15]. Chenhui Zhao et al. reported a positive correlation between work-to-family enrichment and successful aging in a study of 338 older Chinese employees[16]. Moreover work-to-family enrichment is positively associated with emotional commitment and physical or mental health[17]. The level of work-to-family enrichment may vary depending on the productive engagement type, such as paid, self-employed, and unpaid

family workers. These differences can affect working hours, responsibilities and obligations, and the balance between work and family life.

As society continues to age, the age of the working population has increased, and along with this, the workforce of older women is also steadily increasing[18]. However, despite the increase in the proportion of older working women, most studies have focused on working men[13]. Given the growing number of older women in the workforce and changing work and family circumstances, it is essential to understand the work-family experience of older women workers.

This study aims to understand the differences in the health of older working women according to productive engagement type, such as paid, self-employed, and unpaid family workers, and investigate contributing factors to health, such as work-to-family enrichment and happiness. We are interested in answering the following questions: Are there differences in the health of older working women according to productive engagement type? How are work-family enrichment and happiness related to the health of older working women according to productive engagement type?

## Materials and methods

### Design and Participants

This cross-sectional study used 7$^{th}$-wave data from the 2019 Korean Longitudinal Panel Survey of Women and Family (KLoWF). The KLoWF is a nationwide household survey conducted since 2007 to investigate women's lives, family structures, and family changes [19]. We extracted data from working women aged 55 or older who worked at least 18 hours per week, irrespective of employment type, according to the eligibility criteria from the US Department of Labor[20]. The final sample consisted of 1,967 older women, specifically 791 paid workers, 541 self-employed workers, and 635 unpaid family workers. This, after removing 5,756 due to age restrictions, 1,780 who were unemployed, 41 who worked less than 18 hours per week, and 58 missing data.

### Definition of terms

#### *Productive engagement types of work*

Productive engagement refers to paid or unpaid work for older adults[21]. This study classifies productive engagement types as paid, self-employed, and unpaid family workers. A paid worker is a company employee with a paid job[19]. The self-employed category refers to workers engaged in freelance work or private businesses such as restaurants, agriculture, forestry, and fisheries[19]. The category of unpaid family worker refers to someone who works for more than 18 hours to increase family income or support the family in a family business, even if they do not receive direct wages[19].

### Measurement

#### *General characteristics of participants*

Sociodemographic characteristics included age, educational background (≤ high school or> high school), and monthly household income level. Low socioeconomic status (Low SES) corresponds to a monthly household income of less than 680,000 Korean won, the lowest quartile (approximately $ 537)[22]. Current illnesses among participantes include heart disease, cardiovascular disease, musculoskeletal disease, respiratory disease, digestive disease, neurological symptoms, and accidental injury. Current illnesses are presented as yes or no. Work-related characteristics include average working hours per week.
Family-related characteristics included marital status, number of family members, and the average daily housework time of the participants.

#### *Work-to-family enrichment*

Work-to-family enrichment refers to how work positively affects family life and is composed of three items on a five-point Likert scale: "Working gives me satisfaction and vitality in life"; "Working gives me recognition within my family"; "Work makes family life more satisfying." The higher the score, the higher the work-to-family enrichment. Cronbach's α in a previous study was 0.77[23]. The reliability of this study is 0.84.

**Table 1. General Participant Characteristics (N =1,967)**

| Variables | Total | Paid Worker a (n=791) | Self-employed b (n=541) | Unpaid family worker c (n=635) | $\chi^2$/F | p | Scheffe test |
|---|---|---|---|---|---|---|---|
| | n (%) or mean ± SD | | | | | | |
| Sociodemographic | | | | | | | |
| Age | 62.7 ± 5.62 | 61.2 ± 5.05 | 63.0 ± 5.83 | 64.2 ± 5.68 | 52.3 | <.001 | a<b<c |
| Education (≤ High school graduate) | 1,818 (92.5) | 698 (88.4) | 494 (91.3) | 626 (98.6) | 54.3 | <.001 | |
| Household income (dollars) | 961 ± 82.34 | 1,001 ± 80.31 | 1,033 ± 91.1 | 850 ± 74.9 | 14.2 | <.001 | c<a=b |
| Low SES (lowest 25 percentile) | 502 (25.6) | 163 (20.7) | 135 (25.1) | 204 (32.2) | 24.3 | <.001 | |
| Current illness, yes | 996 (50.6) | 331 (41.8) | 247 (45.7) | 418 (65.8) | 88.4 | <.001 | |
| Work-related | | | | | | | |
| Work hours/week | 39.6 ± 15.90 | 35.6 ± 14.02 | 45.7 ± 18.55 | 39.3± 13.94 | 68.7 | <.001 | a<c<b |
| ≥ 40hours/week | 1,163 (59.1) | 467 (59.0) | 365 (67.5) | 331 (52.1) | 28.5 | <.001 | |
| Family-related | | | | | | | |
| Marital status | | | | | | | |
| Married | 1,470 (74.7) | 536 (67.8) | 343 (63.4) | 591 (93.1) | 170.2 | <.001 | |
| Separated/divorced/widowed | 497 (25.3) | 255 (32.2) | 198 (36.6) | 44 (6.9) | | | |
| Number of family members | 2.4 ±1.07 | 2.5 ±1.13 | 2.2 ± 0.46 | 2.4 ± 0.97 | 10.3 | <.001 | b<a=c |
| Housework hours/day | 2.3 ±1.04 | 2.2 ± 1.06 | 2.2 ± 0.99 | 2.5 ± 1.02 | 22.8 | <.001 | a=b<c |
| Work-to-family enrichment | 3.0 ± 0.54 | 3.1 ± 0.52 | 3.0 ± 0.53 | 2.9 ± 0.55 | 22.7 | <.001 | a>b=c |
| Happiness | 6.2 ± 1.43 | 6.2 ±1.46 | 6.1 ±1.40 | 6.3 ±1.41 | 0.99 | .382 | |
| Self-rated Health | 3.2 ± 0.78 | 3.3 ± 0.76 | 3.2 ± 0.76 | 3.1 ± 0.81 | 15.1 | <.001 | a=b<c |

a= paid worker; b= self-employed; c=unpaid family worker; SD= standard deviation

***Happiness***

Happiness was measured by a single item: "How happy are you now?" (Very unhappy 1 to Very happy 10 points; a higher score indicates higher levels of happiness)

***Self-rated health***

Health was self-rated according to the following question, with a five-point Likert scale (from "very poor" to "very good" ): "How do you rate your health in general?". Self-rated health is considered to adequately address the health-related quality of life of older adults[24].

**Ethical consideration**

This study used secondary data from the KLoWF. The data, which was publicly available, did not contain respondents' personal information. All information was anonymized and de-identified prior to analysis. This study was approved by the Daejin University Institutional Review Board (1040656-202104-SB-01-07).

**Statistical analysis**

All statistical analyses were performed using SPSS (version 23.0; IBM, Armonk, NY, USA). Participants' general characteristics were expressed as numbers (percentages) or means (standard deviations). In this study, the $\chi^2$ test was performed for categorical variables and the ANOVA test for continuous variables. We also performed Scheffe's post-hoc tests to identify differences in main variables. We analyzed the relationship between the main variables affecting self-rated health through multiple linear regression analyses.

## Results

### Participant's General Characteristics

The average age of the participants was 62.7. The unpaid worker group was the oldest, with an average age of 64.2 years, followed by self-employed workers at 63.0 years and paid workers at 61.2 years (F = 52.3, $p$ <.001) (Table 1). Compared to paid or self-employed older women, the group of unpaid older women had the highest percentage of high school graduates or below, at 98.6% ($\chi^2$ = 54.3, $p$ <.001). The average household income of the participants was 961 dollars. The unpaid family workers' average household income was the lowest, at 850 dollars (F = 14.2, $p$ <.001). The rate of low socioeconomic status was highest among unpaid family workers, at 32.2 % ($\chi^2$ = 24.3, $p$ <.001). The unpaid family worker group had the highest rate, with a 65.8 % current prevalence ($\chi^2$ = 88.4, $p$ <.001).

The participants worked an average of 39.6 hours per week, the self-employed group worked the most, an average of 45.7 hours per week (F = 68.7, $p$ <.001) (Table 1).

Regarding family-related characteristics, unpaid family workers showed the lowest divorce/separation/widowed rate at 6.9 % ($\chi^2$ = 170.2, $p$ <.001). Participants spent an average of 2.3 hours daily on housework, and unpaid family workers had the longest housework time at 2.5 hours (F = 22.8, $p$ <.001).

Work-to-family enrichment scores were 3.1, 3.0, and 2.9 out of 5 for paid workers, self-employed, and unpaid family workers, respectively (F = 22.7, p <.001), and the overall average happiness score was 6.2 out of 10 points (Table 1). The self-rated health of old women workers was lowest among the unpaid family worker group at 3.1 out of 5 (F = 15.1, $p$ <.001).

### Self-rated health of older working women by productive engagement types

In the case of paid workers, their self-rated health was higher when they were not currently ill (β = -0.37, SE = 0.052, $p$ <.001), when they worked more than 40 hours per week (β = 0.09, SE = 0.052, $p$ =.011), when work-to-family enrichment was high (β = 0.08, SE = 0.048, $p$ =.025), and when happiness was high (β = 0.22, SE = 0.017, $p$ <.001) (Table 2).

**Table 2. Factors on self-rated health in the paid older women worker (n=791)**

| Variables | *B* (SE) | *p* |
|---|---|---|
| Sociodemographic | | |
| Age | -0.32 (0.005) | .386 |
| Education level (≤ High school) | -0.04 (0.078) | .185 |
| Economic status (Low) | -0.06 (0.063) | .063 |
| Current illness, yes | -0.37 (0.052) | <.001 |
| Work-related | | |
| Work hours/week (≥ 40hours) | 0.09 (0.052) | .011 |
| Family-related | | |
| Marital status (Married) | 0.01 (0.058) | .830 |
| Number of family members | -0.03 (0.025) | .488 |
| Housework hours/day | 0.04 (0.023) | .282 |
| Work-to-family enrichment | 0.08 (0.048) | .025 |
| Happiness | 0.22 (0.017) | <.001 |
| $R^2$ | 0.26 | |
| *B*= standardized coefficients; SE= standard error; | | |

**Table 3. Factors on self-rated health in the self-employed older women worker (n=541)**

| Variables | *B* (SE) | *p* |
|---|---|---|
| Sociodemographic | | |
| Age | -0.14 (0.006) | .002 |
| Education level (≤ High school) | 0.02 (0.105) | .569 |
| Economic status (Low) | -0.05 (0.070) | .183 |
| Current illness, yes | -0.41 (0.063) | <.001 |
| Work-related | | |
| Work hours/week (≥ 40hours) | 0.03 (0.064) | .492 |
| Family-related | | |
| Marital status (Married) | -0.00 (0.070) | .966 |
| Number of family members | -0.03 (0.032) | .519 |
| Housework hours/day | 0.02 (0.030) | .675 |
| Work-to-family enrichment | 0.00 (0.057) | .952 |
| Happiness | 0.17 (0.021) | <.001 |
| $R^2$ | 0.27 | |
| *B*= standardized coefficients; SE= standard error; | | |

**Table 4. Factors on self-rated health in the unpaid family older women worker (n=635)**

| Variables | *B* (SE) | *p* |
|---|---|---|
| Sociodemographic | | |
| Age | -0.14 (0.006) | .001 |
| Education level (≤ High school) | -0.02 (0.240) | .541 |
| Economic status (Low) | -0.11 (0.064) | .004 |
| Current illness, yes | -0.34 (0.064) | <.001 |
| Work-related | | |
| Work hours/week (≥ 40hours) | -0.00 (0.059) | .965 |
| Family-related | | |
| Marital status (Married) | -0.06 (0.115) | .085 |
| Number of family members | 0.05 (0.032) | .195 |
| Housework hours/day | 0.07 (0.029) | .059 |
| Work-to-family enrichment | -0.05 (0.056) | .162 |
| Happiness | 0.23 (0.021) | <.001 |
| $R^2$ | 0.25 | |
| *B*= standardized coefficients; SE= standard error; | | |

Self-employed workers' self-rated health was associated with age (β = -0.14, SE = 0.006, *p* =.002), current prevalence (β = -0.41, SE = 0.063, *p* <.001), and happiness (β = 0.17, SE = 0.021, *p* <.001). Still, it did not show a correlation between working hours or work-to-family enrichment (Table 3).

Unpaid family workers' self-rated health correlated with age (β = -0.14, SE = 0.006, *p* =.001), low economic status (β = -0.11, SE = 0.064, p =.004), current prevalence (β = -0.34, SE = 0.064, *p* <.001), and happiness (β = 0.23, SE = 0.021, *p* <.001). Still, it did not show a correlation between working hours or work-to-family enrichment (Table 4).

**Discussion**

This study aimed to identify the factors associated with self-rated health depending on the productive engagement type of older working women. Many people want to work after retirement for economic stability, psychological well-being, and to make a social contribution. However, the labor market is limited. In general, older women tend to have fewer job opportunities and economic stability than men. The poverty rate of older women is higher than that of men, and the average income is only one-third that of men, despite prolonged working hours[25, 26]. We can confirm this trend by the fact that the average monthly household income of the participants of this study was only $961.

However, the paid worker group shows a relatively higher household income level among the three groups, which is presumed more advantageous in securing occupational stability due to its lower age and educational level than the other groups. Job security might have influenced the higher work-to-family enrichment of paid workers, compared to the other groups.

On the other hand, in this study, the work-to-family enrichment of the self-employed or unpaid family workers was relatively low. This fact means that compared to paid workers with predictable working hours and schedules, self-employed or unpaid family workers need greater flexibility in coordinating their business or family roles, as it is challenging to balance work and family.

In general, self-rated health declines with age[27]. However, in this study, among the factors associated with self-rated health, age was not meaningful only among paid working older women, compared to self-employed or unpaid family workers. Self-rated health in old age often reflects socio-psychological factors rather than physical health conditions[24]. After suffering from a severe illness or experiencing declined physical functions, there is a tendency to rate health higher than the actual health status, and older people with the same health status tend to rate health higher than younger people[24, 28]. The result that self-rated health, which is influenced by these various factors, was irrespective of age in the paid worker group suggests that other factors are more influential than age in the paid worker group. As shown in the results of this study, it can be seen that working conditions, work-to-family enrichment, and the value and meaning of happiness affect self-rated health in older paid working women, regardless of age.

Working hours that are too long or too short have been reported to be negatively associated with self-rated health[29]. Significantly, working longer than standard hours (36-40 h) is related to lower self-rated health among women[30]. On the other hand, our study results showed that self-rated health was higher in paid older working women when working hours were over 40 hours. This result may be due to participant characteristics. As a result of additional analysis, there was a high rate of full-time employment, at 89.2%, among those who worked more than 40 hours as paid workers in this study. A full-time job would positively affect self-rated health by ensuring job stability[31].

Work-to-family enrichment was found to be associated with self-rated health only in the paid group. Paid workers often work within organizations, and organizational support and policies can affect work-family enrichment and health. On the other hand, self-employed or unpaid family workers may have more independent roles, so these structural differences may affect the relevance. Economic status was associated with self-rated health only in the unpaid family worker group. Unpaid family-working older women are often economically dependent within the family. They may be significantly affected by the economic status of family members, and access to health care and medical services may be limited due to lack of resources. In contrast, paid working women are more likely to be economically independent as they can earn their income through their jobs. In this study, the household income of unpaid family workers was the lowest, compared to paid working women. Unpaid family workers in difficult economic circumstances may experience limitations on medical services and health care. In addition, among unpaid family working women, stress and anxiety may be caused by economic burdens and roles and responsibilities within the

family, which may increase psychological problems such as depression. Peristera and Westerlund found that a higher burden of unpaid work was associated with more depressive symptoms, especially among women[32]. Economic and psychological hardships faced by unpaid family workers affect their health. Appropriate social support and policy development are necessary. Mental health and improved access to medical services are also important.

This study associated happiness with self-rated health in all worker groups. A study on the relationship between self-rated health and happiness targeting Iranian adults claims that self-rated health is the most crucial factor affecting happiness[33]. Happy employees accomplish more, according to the happy-productive worker thesis[34]. This thesis is based on attitude-behavior models, emphasizing that positive attitudes enhance positive behaviors. Happiness can also positively impact health through a positive mindset and optimistic attitude. Positive emotions can help boost the immune system and reduce stress, positively affecting health[35]. Happiness is also associated with decreased mortality, morbidity, and disease prediction[36]. Older Workers who maintain high levels of happiness, think positively, and handle stress well are likely to be better able to maintain good health.

This study has some limitations. Productive engagement types can be classified by employment type and family-based or community-based. However, this study only dealt with employment types. In-depth studies based on various classifications of productive engagement are needed. Our analysis is limited in suggesting causality by using cross-sectional data. In addition, as this study was conducted on older working women in Korea, there may be limitations in applying it to the general population with different sociocultural backgrounds or policies. Nevertheless, this study has the strength of analyzing health-related factors such as work-to-family enrichment, economic status, and happiness according to productive engagement types in older working women, who have been studied relatively less. This study confirmed that health status differs according to productive engagement type and that the factors affecting health are different. Therefore, health policy development considering these differences is necessary.

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