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Horticulture Activities and Mental Wellness in Young Adults During the COVID-19 Pandemic: A Descriptive Correlational Study

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ABSTRACT

Objective: The COVID-19 pandemic has significantly affected mental health and coping strategies, particularly among young Filipino adults. Evidence suggests that social isolation and extreme routine changes brought by the pandemic are associated with mental wellness issues, including depression, stress, and loneliness. Horticulture activities have emerged as a potential coping mechanism, supported by Roy's Adaptation Model and Kaplan's Attention Restoration Theory.

Material and Methods: This descriptive correlational study was conducted among 361 randomly selected young adult respondents (18-25 years) of the "Iloilo Plant Exchange" Facebook group. Data were obtained through a validated and reliability-tested three-part questionnaire, assessing demographics, horticulture activities, and mental wellness. Descriptive analysis employed frequency, percentage, means, and standard deviations, while inferential analysis utilized t-test, One-Way ANOVA, and Pearson's r at a 0.05 alpha level.

Results: Young adults exhibited a high extent of horticulture activities overall, with variations from moderate to high based on individual profiles. The mental wellness level during the pandemic was average, except for postgraduates who reported high levels. Higher educational attainment and family income were significantly associated with increased horticulture engagement. College and postgraduate respondents had significantly higher mental wellness levels compared to high school graduates. During the pandemic, a highly significant positive relationship was found between horticulture activities and mental wellness.

Conclusion: The study's findings suggest that promoting horticulture activities may enhance mental wellness among young adults during the pandemic, providing valuable insights for mental health interventions and policy development.

Keywords: Horticultural Activities, Mental Wellness, COVID-19, Young Adults

INTRODUCTION

Despite the Philippines consistently ranking among the top five countries for global optimism (World Health Organization, 2020) (1), the National Center for Mental Health (NCMH) has reported a significant increase in mental health issues, particularly depression, from around 80 cases pre-COVID-19 lockdown to nearly 400 cases per month (DOH, 2020) (2). Young adults aged 18-25 years exhibit the highest prevalence of any mental illness (AMI) at 25.8% compared to other age groups (The National Institute of Mental Health Information Resource Center, 2019) (3). Mental wellness, as defined by the World Health Organization (WHO), entails a state of well-being that enables individuals to utilize their abilities to manage stress, work productively, and contribute to their communities (World Health Organization, 2018) (3).

The COVID-19 pandemic has profoundly impacted the Philippines, leading to exponential increases in positive cases (CNN Philippines, 2020) (4). As a result, Filipinos were confined to their homes, resulting in heightened anxiety and uncertainty. Hopeline Philippines reported a 200% increase in calls in April 2020, with 70-80% related to elevated anxiety levels (Emmons, 2020) (5). Subong (2020) (3) also reported a dramatic increase in suicide rates in the Western Visayas region between January and August 2020. Amid this crisis, horticulture activities emerged as a popular coping strategy, giving rise to the terms "plantitos" and "plantitas" (Antonio, 2020) (6).

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Dr. Benjamin Rush, regarded as the "Father of American Psychiatry," first recognized the positive effects of gardening on individuals with mental illness in the 19th century (American Horticultural Therapy Association, 2020) (7). Subsequent studies have supported these findings, demonstrating improvements in mental health, reduced loneliness and depression, and enhanced quality of life through horticultural therapy interventions (Chen & Ji, 2015) (8). However, local empirical evidence supporting the positive relationship between horticulture and mental wellness remains scarce.

The existing literature reveals a gap in understanding the relationship between horticulture activities and mental wellness among young adults in the Philippines, especially during the COVID-19 pandemic. Moreover, there is limited research examining the underlying factors contributing to this population's engagement in horticulture activities.

This study aims to address these gaps by investigating the relationship between young adults' horticulture activities and mental wellness during the pandemic, exploring potential contributing factors and examining the impact of different sociodemographic variables. By doing so, the study seeks to provide valuable insights for mental health interventions and policy development, ultimately promoting optimal mental wellness among young adults during the pandemic through the expansion of horticulture activities.

Literature Review

The COVID-19 pandemic has significantly impacted the mental wellness of young adults worldwide. The World Health Organization (WHO, 2020) (1) defines health as a state of complete physical, mental, and social well-being. Mental wellness, in turn, refers to a positive state of mental health characterized by rational thinking and positive responses to thoughts, the ability to determine strengths and weaknesses in situations, build relationships, enjoy life, and be productive (Singapore Association for Mental Health, 2018) (9). Mental health problems, however, are pervasive across all walks of life and can have various predisposing factors, such as biological factors, life experience, and family problems (MentalHealth.gov, 2020) (10).

In the Philippines, mental health illness ranks as the third most common disability (Redaniel et al., 2011) (11). Despite the country's practice of self-reliance and resilience, seeking help from friends and family tends to be the first-line choice due to the stigma attached to mental health and disorders, which often leads individuals to experience shame and lose face (Martinez et al., 2020) (12). A reluctance to seek help is a significant issue in the healthcare system, but observations differ based on the level of distress perceived, social and financial support, and previous experience with mental health services (Martinez et al., 2020) (12).

The COVID-19 pandemic has exacerbated mental health issues in the Philippines, with the National Mental Health Center reporting a spike in calls relating to mental health crises (Department of Health, 2020). Even before the pandemic, the country had one of the highest cases of depression in Southeast Asia, with females, less-educated individuals, the non-married, children, and adolescents considered the most vulnerable groups (Cuevas, 2020, as cited in Vera, 2020) (13).

One promising avenue to promote mental wellness among young adults during the pandemic is therapeutic horticulture, which utilizes gardening as a means to improve health and enhance mental wellness. Horticulture activities can be practised in groups or as a solo activity to enhance a person's physical, emotional, cognitive, and social aspects. Gardens themselves can also be therapeutic places for self-meditation and socialization, as demonstrated by the profusion of plantitos and plantitas (14).

According to the American Horticulture Therapy Association (2015), horticultural therapy helps improve memory, cognitive abilities, task initiation, language skills, and socialization. It can also aid in physical rehabilitation and improve vocational skills (Williams, 2006)(15). Engagement with the natural environment has been shown to have a comforting effect on individuals. Horticultural activities have been widely used as coping mechanisms by individuals with mental disorders and those who want to enhance their mental well-being (Clatworthy et al., 2013; Sempik et al., 2003)(16,17).

Research suggests that horticultural activities have beneficial effects on individuals' psychological stability, by stimulating the senses in many ways, including intuition and nonverbal communication (Dravigne et al., 2008) (18). Horticulture activities have shown positive effects on disease resistance and chronic stress (Eling, 2006) (19). They offer emotional advantages such as decreasing stress, stabilizing mood, and increasing feelings of peace, spirituality, and pleasure (Berman, 2008). Moreover, self-efficacy, self-esteem, and quality of life can be improved through horticultural counselling (Berman, 2008). Individuals with disabilities can also develop effective coping skills and even motivational competitiveness through horticulture (Berman, 2008)(20).

During the COVID-19 pandemic, young adults have experienced unprecedented disruptions to their daily activities, primarily due to the implementation of physical or social distancing measures to limit the spread of the virus. The sudden closure of educational institutions, workplaces, and recreational facilities has led to a significant change in the lifestyle and routine of this population, which may have adverse effects on their mental health and well-being.

Studies have shown that social isolation and loneliness, which are common consequences of physical distancing, are associated with increased risk for depression, anxiety, and other mental health problems (Killgore et al., 2020; Banerjee & Rai, 2020) (21, 22). Moreover, young adults may experience heightened stress and uncertainty related to their academic and career prospects, financial stability, and the overall state of the world (Cao et al., 2020; Fitzpatrick et al., 2020) (23,24).

In response to these challenges, some young adults have turned to horticultural activities to cope and promote their mental wellness. Horticultural activities involve gardening, plant cultivation, and other forms of nature-based interventions that can provide numerous benefits, including stress reduction, improved mood, and enhanced cognitive functioning (Soga et al., 2017; Staats et al., 2016)(25, 26).

To explore the potential benefits of horticultural activities for young adults during the pandemic, a descriptive correlational study was conducted. The study examined the relationship

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between engagement in horticultural activities and mental wellness outcomes, such as perceived stress, anxiety, and depression.

MATERIAL and METHODs

Theoretical Framework

This study employed two theoretical frameworks: Roy's Adaptation Model (RAM) and Kaplan's Attention Restoration Theory (ART). Roy's Adaptation Model posits that individuals are bio-psycho-social beings and views the person as a holistic, adaptive system constantly interacting with their internal and external environment (Roy, 1984)(27). The main task of the human system is to maintain integrity in the face of environmental stimuli (Phillips, 2011)(28). This model comprises three primary concepts: stimuli, coping processes, and adaptive responses. Coping processes mediate the relationships between the stimuli and the adaptive modes, which comprise physiologic-physical mode, self-concept identity mode, role function mode, and interdependence mode. Effective adaptation can be achieved and maintained if these adaptive modes are met, leading to optimal health, quality of life, and death with dignity (Roy & Andrews, 1991)(29).

The level of mental wellness is one of the areas of focus in Roy's Adaptation Model. Adapting to and maintaining the mentation of the person is essential in the psychological area of the theory (Roy & Andrews, 1991)(29). In this study, the independent variable of horticulture activities serves as a stimulus that can potentially satisfy the adaptive modes pertinent to the theory of adaptation, while the dependent variable of mental wellness reflects the degree of the respondent's adaptation.

Kaplan's Attention Restoration Theory, on the other hand, suggests that nature is abundant with properties or characteristics necessary for the restorative experience, while horticulture activities are considered the restorative environmental experience in ART, with the level of mental wellness perceived by respondents serving as its restorative effect (Kaplan, 1995)(30). According to ART, four characteristics make an environment restorative: fascination, being away, extent, and compatibility. Additionally, ART suggests four stages of attention restoration: clearer head or concentration, mental fatigue recovery, soft fascination or interest, and reflection and restoration (Ackerman, 2020) (31). The study's independent variable, horticulture activities, is considered a stimulus that could potentially satisfy the adaptive modes in Roy's Adaptation Model. Horticulture activities are likewise considered a restorative environmental experience in Kaplan's Attention Restoration Theory, with the level of mental wellness perceived by respondents serving as its restorative effect. The relationship between the extent of horticulture activities and the level of mental wellness among young adults during the pandemic was explored using these theoretical frameworks.

Methodology

This study utilized a descriptive-correlational research design to examine the relationship between the extent of horticulture activities and mental wellness among young adults aged 18 to 25 years old during the pandemic. The study collected data through an online survey conducted on Facebook, specifically in a randomly chosen exclusive horticulture group, the "Iloilo Plant Exchange," with members from Iloilo, Philippines.

The target population for this study was young adults who engaged in horticultural activities, and a total of 361 respondents participated in the survey. The sample size was determined using the G*Power software, with a 30% effect size, 5% margin of error, and 80% statistical power.

The study utilized simple random sampling, and numerical codes were assigned to individual names of the members of the Facebook group page "Iloilo Plant Exchange." Inclusion criteria for the study included young adults aged 18 to 25 years old who lived in Iloilo, Philippines, and were members of the Facebook group. Exclusion criteria were individuals with hidden or inactive Facebook accounts.

Ethical Considerations

The study adhered to ethical guidelines to protect respondents. Approval was obtained from the Unified Research Ethics Review Committee (URERC), and informed consent was acquired from participants. Respondents were assured of confidentiality, voluntary participation, and the option to withdraw at any time without penalty. No monetary incentives were provided.

Research Instruments, Scoring, and Interpretation

The study utilized a three-part questionnaire covering demographics, horticultural activity, and mental wellness. The horticultural activity section was a 15-item, 5-point Likert scale, while the mental wellness assessment used the Warwick-Edinburgh Mental Well-being Scale (WEMWBS). Experts conducted both face and content validation. Reliability testing using Cronbach's alpha revealed high internal consistency reliability, with a score of 0.96 for the researcher-made questionnaire and 0.952 for the WEMWBS. The horticultural activity questionnaire used a scale from Never (0 days a week) to Very Often (7 days a week). The scores were interpreted as Low, Moderate, or High engagement. WEMWBS scores were assigned numerical weights for mental wellness and categorized as Low, Average, or High, indicating the respondent's mental well-being status.

RESULTs and DISCUSSION

Distribution of Respondents According to their Demographic Profile

The demographic profile of the 361 respondents showed that the majority were female (58.2%), high school graduates (67.9%), and with a family income above Php 500,000 (32.7%). Table 1 presents the distribution of respondents based on their sex, education attainment, and family income. Out of the entire population, 41.8% were male, and 58.2% were female. In terms of education attainment, 245 respondents (67.9%) were high school graduates, 99 (27.4%) were college graduates and 17 (4.7%) were post-graduates. Furthermore, 5.3% of respondents had a family income below Php 40,000, 5.3% had a family income between Php 40,000 to Php 59,999, 7.8% had a family income between Php 60,000 to Php 99,999, 20.8% had a family income between Php 100,000 to Php 249,999, 28.3% had a family income between Php 250,000 to Php 500,000, and 32.7% had a family income above Php 500,000.

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Table 1. Distribution of Respondents according to their demographic profile

Category	F	%
Entire Population	361	100
Sex		
Male	151	41.8
Female	210	58.2
Education Attainment		
High School Graduate	245	67.9
College Graduate	99	27.4
Post Graduate	17	4.7
Family Income (Php)		
Below 40,000	19	5.3
40,000 – 59,999	19	5.3
60,000 – 99,999	28	7.8
100,000 – 249,999	75	20.8
250,000 – 500,000	102	28.3
Above 500,000	118	32.7

Extent of Horticulture Activities among Young Adults During the Pandemic

The present study investigated the extent of horticulture activities among young adults during the pandemic, with a focus on the influence of demographic factors on their engagement. The entire group of respondents had a high extent of horticulture activities (M=50.59, SD=15.94). However, a closer examination revealed variations in the means based on sex, educational attainment, and family income. The standard deviations indicated a wide dispersion of the means, implying that the young adults had heterogeneous levels of engagement in horticulture activities.

Males had a higher mean score (M=52.17, SD=15.94) than females (M=49.46, SD=15.89), consistent with previous studies (Park et al., 2015)(32). These studies suggested that male gardeners engage in horticulture activities for various reasons, including overall food, health, and nutrition, and as a way to connect with the past and promote tradition. In terms of educational attainment, post-graduates had the highest mean score (M=62.82, SD=17.18), followed by college graduates (M=54.03, SD=16.94), and high school graduates (M=48.35, SD=14.84). These findings were consistent with the study by Dalaeen (2018)(33), which suggested that higher levels of education were associated with a greater inclination toward horticultural activities in urban settings.

Respondents with family incomes between Php 250,000 and Php 500,000 had the highest mean score (M=53.68, SD=15.62) compared to other income categories. The findings were consistent with Lier's (2016) report that gardens and horticultural settings were more evident in higher-income families. Similarly, Dalaeen (2018)(33) found that higher income motivated individuals to engage in horticultural activities. The study highlights the importance of demographic factors in the extent of horticulture activities among young adults during the pandemic.

Table 2 shows the extent of horticulture activities among the respondents when grouped according to profile. The mean scores were described as high (50.01-75.00), moderate (25.01-50.00), and low (25.00 and below) based on the indicated scale.

Table 2. Extent of horticulture activities among the respondents as a whole and when grouped according to profile

Category	Mean	Description	SD
Entire Population	50,59	High	15,94
Sex			
Male	52,17	High	15,947
Female	49,46	Moderate	15,89
Education Attainment			
HS Graduate	48,35	Moderate	14,84
College Graduate	54,03	High	16,94
Post Graduate	62,82	High	17,18
Family Income (in Php)			
Below 40,000	48,12	Moderate	16,75
40,000 – 59,999	47,16	Moderate	18,8
60,000 – 99,999	43,36	Moderate	12,12
100,000 – 249,999	47,45	Moderate	13,26
250,000 – 500,000	53,68	High	15,62
Above 500,000	52,53	High	17,18

Note: The description was based on the indicated scale. Low (25.00 and below), Moderate (25.01 – 50.00), High (50.01 – 75.00).

Level of Mental Wellness among Young Adults During the Pandemic

The study investigated the level of mental wellness among young adults during the pandemic, finding that the overall level was average to high (M=51.86, SD=12.06), as demonstrated in **Table 3**. When classified according to sex, males (M=52.84, SD=12.09) had a higher mean score than females (M=51.15, SD=12.03). In terms of educational attainment, post-graduates had the highest mean score of 59.71 (SD=14.85), followed by college graduates (M=55.68, SD=12.64), and high school graduates (M=49.77, SD=11.02). Finally, the data shows that respondents with a family income of Php 250,000 to Php 500,000 had the highest mean score on the level of mental wellness during the pandemic compared to other income categories.

These results are consistent with the findings of Niemeyer et al. (2019)(34), which suggest that higher levels of educational attainment may have a positive association with psychological resources, psychosocial characteristics, and mental health. Similarly, the study by Sareen et al. (2011) (35) provides evidence that higher family income levels are related to lower mental health problems and incident mental disorders. These findings suggest that young adults with higher levels of education and family income may have better coping strategies and resilience in dealing with adversity, contributing to their higher levels of mental wellness during the pandemic.

Inferential Analysis

Relationship between the Extent of Horticulture Activities and Level of Mental Wellness

The results show a significant positive correlation between the extent of horticulture activities and the level of mental wellness among young adults during the pandemic. Table 4 presents the statistical data, with a correlation coefficient (r) of .655 and a p-value of .000<.05, indicating that the null hypothesis was rejected. Thus, the higher the engagement of young adults in horticultural activities during the pandemic, the more likely they have high levels of mental wellness or optimal mental well-being. The study's findings support the use of horticultural activities as a mentally healthy practice for young adults during the pandemic. Horticultural activities

may serve to sustain one's degree of mental wellness, supporting both Callista Roy's Adaptive model and Kaplan's Restoration theory. The findings also align with previous studies that suggest horticultural activities reduce stress, anxiety, and enhance satisfaction and motivation, leading to improved cognitive abilities, self-efficacy, self-esteem, and quality of life. Therefore, horticultural activities may be a viable option to enhance young adults' mental wellness during the pandemic.

Table 3. Level of mental wellness among the respondents as a whole and when grouped according to profile

Category	Mean	Description	SD
Entire Population	51,86	Average	12,06
Sex			
Male	52,84	Average	12,09
Female	51,15	Average	12,03
Education Attainment			
HS Graduate	49,77	Average	11,02
College Graduate	55,68	Average	12,64
Post Graduate	59,71	High	14,85
Family Income (in Php)			
Below 40,000	50,37	Average	11,15
40,000 – 59,999	51,21	Average	13,25
60,000 – 99,999	48,5	Average	10,81
100,000 – 249,999	52,23	Average	10,86
250,000 – 500,000	52,65	Average	11,97
Above 500,000	52,08	Average	13,13

Note: The description was based on the indicated scale. Low Mental Wellness (44.00 and below), Average Mental Wellness (44.01 – 59.00), High Mental Wellness (59.01 – 70.00).

Table 4. Significant relationship between the extent of horticulture activities and level of mental wellness among young adults during the pandemic

Category	extent of horticulture activities		
	N	r	p-value
Mental wellness	361	.655*	.000

* $p<0.05$

CONCLUSION

In conclusion, this study explored the extent of horticulture activities and level of mental wellness among young adults during the pandemic in Iloilo, Philippines. The findings suggest that young adults in Iloilo, Philippines have a high extent of horticulture activities and average to high level of mental wellness during the pandemic, regardless of their demographic profiles. Furthermore, a significant positive correlation was found between the extent of horticultural activities and the level of mental wellness. The study suggests that the greater the involvement of young adults in horticultural activities during the pandemic, the higher the likelihood that the individuals have high levels of mental wellness or optimal mental well-being.

This study highlights the potential of horticulture activities to promote mental wellness among young adults during the pandemic. Horticultural activities may serve as a mentally healthy practice that can be advocated to sustain one's degree of mental wellness. Moreover, horticultural activities offer a unique form of physical activity that can promote environmental conservation and enhance quality of life. These findings have practical implications for health professionals and policymakers in advocating for horticultural activities to promote mental wellness and improve the overall well-being of young adults. Further research is necessary to explore the long-term effects of horticultural activities on mental wellness and to develop effective interventions that promote this activity among young adults.

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