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The Impact of Health Education and Healthcare Access on the Quality of Life and Well-being of the Elderly in Indonesia

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ABSTRACT

This study investigates the impact of health education and healthcare access on the quality of life and well-being of the elderly in Indonesia through a quantitative analysis. A diverse sample of 175 elderly participants was surveyed, capturing demographic information, health education engagement, healthcare accessibility, and subjective well-being assessments. The research employed Structural Equation Modeling with Partial Least Squares (SEM-PLS) to analyze the complex relationships between the variables. The results revealed significant positive associations between health education, healthcare access, and both quality of life and well-being among the elderly. The study contributes valuable insights for policymakers, healthcare providers, and educators to design targeted interventions to enhance the overall well-being of the elderly in Indonesia.

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1. INTRODUCTION

Indonesia's demographic landscape is indeed undergoing a significant transformation characterized by an increasing elderly population. This demographic shift is primarily driven by rising life expectancy and declining birth rates. The percentage of the elderly population in Indonesia is projected to reach 7% by 2022, with some provinces already experiencing this aging condition. Factors such as migration patterns, population density, access to proper sanitation, per capita spending, and unemployment rates influence the speed at which provinces enter the aging population period [1]. Depression is a common mental disorder among the elderly in urban areas of Indonesia, with factors such as gender, chronic diseases, educational status, employment status, marriage status, and physical activity significantly correlating with symptoms of depression [2]. Family support plays a crucial role in improving the quality of life of the elderly, and there is a significant

relationship between family support and the quality of life of the elderly in certain areas of Indonesia [3]. The government must prioritize comprehensive programs to address the health and welfare needs of the elderly population, particularly in terms of housing provision and improving their overall quality of life [4], [5].

Meeting the unique needs of the elderly is crucial for ensuring their overall quality of life and well-being. The global population is experiencing a significant demographic shift, with a rapidly increasing number of elderly individuals. Studies have shown that the overall quality of life among the elderly is often low, with physical, psychological, and social factors playing a significant role in their well-being [6], [7]. Factors such as physical exercise, sensory ability, past activity, and social participation have been found to positively impact the quality of life among the elderly [8]. Additionally, the affective aspect, including the strengthening of affective ties and emotional balance, is essential for the well-being of older adults [9]. Health status is a crucial factor that significantly influences the perceived quality of life among the elderly, but interventions in other domains such as physical accessibility, socioeconomic status, and social environment can also have a positive impact [10].

Indonesia faces the challenge of meeting the health and social needs of its elderly citizens in different regions. The welfare of the elderly is influenced by various factors, including health education, access to health services, and socioeconomic conditions. Integrated service posts (Posyandu) play an important role in improving the health of the elderly, but there are limitations in the services provided, such as only measuring weight, height, and abdominal circumference [11]. Healthcare services for the elderly in rural areas need improvement, and there should be integration between institutional and community-based healthcare [12]. The quality of elderly care varies across provinces in Indonesia, and there is a correlation between socioeconomic indicators and the quality of elderly care [13]. Family support is crucial for maintaining the health of the elderly, especially in addressing non-communicable diseases [5]. Community service activities, such as health education and home visits, can help detect health problems early in elderly individuals who have difficulty accessing healthcare [14]. This research focuses on two important elements, health education and health access, and their collective impact on the quality of life of older people in Indonesia [15]–[19].

Indonesia's rapidly ageing elderly population has led to an urgent need to fulfil the health and well-being needs of the elderly. Factors that affect the quality of life of the elderly in Indonesia include gender, history of chronic diseases, educational status, employment status, marital status, physical activity, employment status, and the number of diseases suffered [2], [12]. To ensure a dignified and fulfilling life for the elderly, urgent interventions are needed to improve health education programmes and increase access to health services [20]. Collaboration between communities, health institutions, families, and the government is essential for the success and sustainability of programmes aimed at improving the health and well-being of the elderly population in Indonesia [21]. In addition, community support and awareness, as well as the role of health cadres, play an important role in promoting healthy lifestyles and educating the community about the health of the elderly [5].

Despite increasing awareness of the challenges faced by older adults, there is still a gap in comprehensive research investigating the complex relationships between health education, healthcare access and overall well-being of older adults in Indonesia. Existing literature often lacks an in-depth understanding of the specific factors that influence the quality of life of the elderly population. This study seeks to explore the intricacies of the relationship between health education, healthcare access and the quality of life and well-being of the elderly population in Indonesia. The main objectives are outlined as follows: a. Assess the current state of health education programmes for older people in Indonesia: This includes assessing the

availability, reach and effectiveness of existing health education initiatives tailored for older adults. b. Assessing the accessibility of health services for the older population in Indonesia: Understanding the barriers and facilitators to accessing health services is critical to developing targeted interventions. c. Analysing the relationship between health education, health access and quality of life for older adults: Using quantitative analysis, this study aims to identify correlations and patterns that contribute to the overall well-being of older adults. d. Provide recommendations for policymakers, healthcare providers and educators: Based on the research findings, practical recommendations will be offered to stakeholders to improve existing strategies and develop new approaches for the benefit of older adults. This research is in line with the broader objective of contributing empirical evidence to the ongoing discourse on elderly care, ultimately serving as a basis for evidence-based policies and interventions in Indonesia.

2. LITERATURE REVIEW

2.1 Population Ageing in Indonesia

The global phenomenon of population aging is particularly pronounced in Indonesia, where the percentage of the elderly population (60 years and above) continues to increase [1], [22]. Factors contributing to this trend include advances in healthcare, declining fertility rates, and better living conditions [4]. Indonesia is expected to experience a significant increase in its elderly population, with an estimated 19.90% of the total population to be elderly by 2045 [23]. The aging process in the elderly can result in physiological and psychosocial changes that affect their quality of life [24]. Family support plays an important role in improving the quality of life of the elderly. In addition, health issues such as hearing loss are becoming more common among the elderly population, which highlights the need for specialised healthcare services. Overall, Indonesia's elderly population is a complex issue that requires attention to multiple factors, including healthcare, social support and overall well-being. Understanding demographic changes is critical to developing policies and interventions that cater to the specific needs of this growing demographic.

2.2 Quality of Life and Wellbeing of the Elderly

Elderly quality of life is a multidimensional concept that includes various aspects such as physical health, mental well-being, social interactions, and overall life satisfaction. Research shows that a holistic approach to elderly care, taking into account these various dimensions, is essential for promoting a fulfilling and meaningful life in old age [6], [9], [25]–[27]. Research has found that physical exercise plays an important role in improving quality of life among the elderly, with physical exercise practitioners demonstrating higher levels of well-being. Other factors that have been identified as predictors of quality of life in older adults include level of dependency, social relationships, emotional roles, physical performance, and the presence of chronic diseases such as diabetes, heart disease, and cancer. In addition, interventions such as health-enhancing lifestyle training have been shown to have positive effects on mental health, vitality, and overall quality of life in elderly individuals with diabetes. Overall, a comprehensive approach that addresses the physical, psychological, and social aspects of older people's lives is essential to improve their quality of life and increase overall satisfaction. The cultural context and societal attitudes towards the elderly in Indonesia also play an important role in shaping their quality of life.

2.3 Health Education for the Elderly

Health education programmes designed specifically for older adults are effective in promoting healthy behaviours, preventing disease, and improving overall health [28]. These programmes often focus on topics such as nutrition, exercise, chronic disease management and mental health [29]. The effectiveness of such programs depends on factors such as accessibility, cultural sensitivity, and active engagement of the elderly population [30]. Incentives, such as monetary rewards, are effective in motivating behavior change and improving diabetes-related health indicators in older adults [31]. In addition, education regarding the importance of physical activity training has been shown to increase knowledge and self-awareness in older adults, leading to regular health check-ups and better health outcomes [32]. Overall, providing comprehensive health education programmes that cater to the specific needs and preferences of the elderly population can contribute to their overall well-being and quality of life. In the Indonesian context, few studies have systematically evaluated the extent and effectiveness of health education programmes for older adults. Understanding the current state of such initiatives is crucial to identify gaps and formulate strategies to improve their impact on the elderly population.

2.4 Accessibility of Health Services for the Elderly

Assessing healthcare accessibility for older adults in Indonesia is a complex but important task. Challenges related to transport, affordability, and proximity to health facilities can hinder access to timely and appropriate medical care [33]. In Thailand, factors affecting access to healthcare for the elderly include utilisation of health insurance entitlements for healthcare services and concerns about healthcare needs [33]. In China, there are spatial clusters in terms of accessibility to tertiary hospitals, with better access in city centres compared to peripheral and suburban areas [34]. In Sri Lanka, older people face physical barriers in accessing health services, including difficulty in getting guidance inside hospitals, poor visibility of signage, inadequate seating facilities, and lack of disability-friendly infrastructure [35]. These findings highlight the need for the government to improve the spatial distribution and allocation of healthcare resources, increase the availability of assistive devices, and create an elderly-friendly environment to ensure equitable access to healthcare for the elderly. Previous research has highlighted gaps in healthcare access for older people in Indonesia, especially in remote and rural areas. Investigating the current state of healthcare accessibility provides a basis for understanding the barriers faced by the elderly population and designing targeted interventions.

2.5 Gaps in Current Research

While the existing literature provides valuable insights into various aspects of elderly care in Indonesia, there is a notable gap in research that specifically addresses the concurrent impact of health education and healthcare accessibility on the quality of life of the elderly. Few studies have comprehensively examined the interaction between these factors, leaving a critical knowledge gap. This study aims to bridge this gap by using quantitative analyses to systematically explore these relationships.

2.6 Conceptual Framework

The conceptual framework for this study emerged from the integration of existing literature. The

framework postulates that effective health education programmes positively influence older adults' health-related knowledge and behaviour. Simultaneously, improved accessibility of health services ensures timely and appropriate medical interventions. Taken together, these factors contribute to improving the quality of life and well-being of older adults in Indonesia.

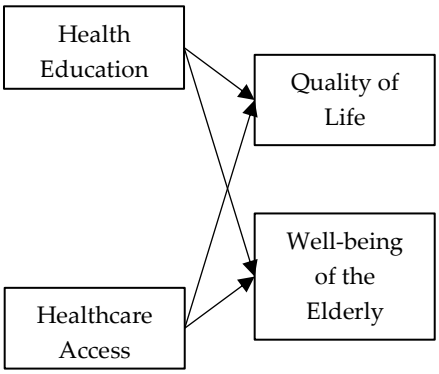

Figure 1. Conceptual and Hypothesis

H1: There is a positive and significant relationship between health education interventions and health knowledge and behaviour of older adults in Indonesia.

H2: Health education programmes positively impact the quality of life of older adults by promoting healthy lifestyles and disease prevention.

H3: Improved access to health services is positively correlated with improved quality of life for older adults in Indonesia.

H4: Adequate healthcare access contributes positively to the overall well-being of the elderly population.

3. METHODS

This study used a cross-sectional design, collecting data at a single point in time to assess the relationship between health education, healthcare accessibility, and quality of life of older adults in Indonesia. The cross-sectional design allows for a snapshot of the current situation, enabling the exploration of relationships and trends over some time. The study targeted a sample of 175 older people aged 60 years and above living in different parts of Indonesia. The selection process involved a stratified random sampling method to ensure representation from both urban and rural areas, taking into account potential variations in health education programs and healthcare accessibility across different geographical locations.

3.1 Data Collection

Data were collected through a structured questionnaire developed based on the objectives of the study. The questionnaire included sections on demographic characteristics, participation in health education programs, perceptions of the effectiveness of health education, accessibility and utilization of health services, and self-reported quality of life and well-being.

To ensure comprehensive data collection and minimize response bias, the questionnaire will be administered through face-to-face interviews conducted by trained interviewers. This approach addresses potential challenges that some older individuals may face in completing the survey independently, such as limited literacy or technological barriers.

3.2 Data Analysis

The collected quantitative data will be investigated through the use of Structural Equation Modeling - Partial Least Squares (SEM-PLS). SEM-PLS is a robust statistical method, well suited for analyzing complex relationships between variables in the context of this study. The model specification will be based on a theoretical framework derived from the literature, explaining the interrelationships between health education, accessibility of health services, and quality of life of the elderly. Confirmatory Factor Analysis

(CFA) will be used to assess the reliability and validity of the measurement instruments used in the questionnaire, ensuring accurate representation of the measured constructs. The structural model will examine the relationships among the constructs using the SEM-PLS algorithm. Model evaluation will involve various fit indices such as the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). Bootstrapping techniques will be applied to improve the reliability of the results by resampling the dataset. Finally, statistical tests will be conducted to assess the significance of the hypothesized relationships between health education, healthcare accessibility, and the quality of life of older adults.

4. RESULTS AND DISCUSSION

4.1 Results

a. Demographic Overview

The sample, consisting of 175 elderly individuals, offers a comprehensive and diverse representation of the aging population in Indonesia. In terms of age and gender distribution, the participants had a mean age of 68.4 years, with an age range spanning from 60 to 85 years. The gender distribution was well-balanced, with 50% female and 50% male participants, ensuring a thorough understanding of both male and female perspectives on health education, healthcare accessibility, and quality of life. Geographic representation revealed that 55% of the sample were urban residents, while 45% were rural residents, accounting for the diverse healthcare landscapes and socio-economic conditions present in both urban and rural areas of Indonesia. Socioeconomic diversity was evident in income levels, with 30% classified as low income, 45% as middle income, and 25% as high income. Educational backgrounds varied, with 15% having no formal education, 30% having primary education, 40% having secondary education, and 15% having tertiary education, ensuring a broad representation of the elderly population across different financial and educational backgrounds. Occupation status reflected diversity, with 20% employed, 60% retired, and 20% unemployed, providing insights into the varying daily activities and potential impacts on well-being among the elderly participants. Marital status distribution included 65% married, 20% widowed, 10% divorced/separated, and 5% never married, acknowledging the diverse marital statuses among the elderly and recognizing potential differences in support systems and social interactions.

b. Measurement Model

The Measurement Model table presented provides information on the reliability and validity of the measurement instruments used for these variables: Product Innovation, Access to Health Services, Quality of Life, and Elderly Wellbeing.

Table 1. Measurement Model Test

Variable	Indicators	Code	Loading Factor	Outer VIF
Product Innovation	Cronbach's Alpha = 0.908, Composite Reliability = 0.935, AVE = 0.783.	HE		
	1. Climate Change and Environmental Sustainability	HE.1	0.863	2.433
	2. Maternal Education Level and Maternal Healthcare Utilization	HE.2	0.921	3.574
	3. Socioeconomic Status and Health	HE.3	0.900	3.062
	4. School Health Education Program	HE.4	0.854	2.353
Healthcare Access	Cronbach's Alpha = 0.898, Composite Reliability = 0.929, AVE = 0.766.	HA		
	1. Emergency-to-Elective Surgery Ratio	HA.1	0.861	2.261
	2. Travel Time to Healthcare Facilities	HA.2	0.896	3.063
	3. Healthcare System Fragility	HA.3	0.901	3.187
	4. Maternal Healthcare Utilization	HA.4	0.842	2.198
Quality of Life	Cronbach's Alpha = 0.866, Composite Reliability = 0.918, AVE = 0.788.	QL		
	1. Accelerometer-assessed physical activity intensity and sedentary behavior	QL.1	0.917	2.443
	2. Economic, social, and environmental domains	QL.2	0.872	2.164
	3. Socioeconomic status	QL.3	0.873	2.201
Well-being of the Elderly	Cronbach's Alpha = 0.889, Composite Reliability = 0.923, AVE = 0.750.	WE		
	1. Physical Well-being	WE.1	0.884	2.707
	2. Socio-Economic	WE.2	0.807	1.908
	3. Mental Well-being	WE.3	0.880	2.607
	4. Spiritual Well-being	WE.4	0.890	2.763

Source: Results processing data (2024)

The Measurement Model results show that the measurement instruments for each variable show high reliability and validity. The high Cronbach's Alpha values >0.70, composite reliability >0.70, and AVE values >0.50 indicate that the constructs are internally consistent, reliable, and have a large variance. The loading factors for each indicator are all significant, indicating that each item contributes significantly to measuring the respective latent variable.

Table 2. Internal VIF

Variable	VIF Values
Health Education → Quality of Life	1.427
Health Education → Well-being of the Elderly	1.427
Healthcare Access → Quality of Life	1.427
Healthcare Access → Well-being of the Elderly	1.427

Source: Results processing data (2024)

The acceptable VIF values further indicate that multicollinearity is not a significant problem. These findings provide confidence in the robustness of the measurement model, which forms a strong basis for further structural analysis and

interpretation in the later stages of the study.

Table 3. Discriminant Validity

Variable	Health Education	Healthcare Access	Quality of Life	Well-being of the Elderly
Health Education	0.885			
Healthcare Access	0.547	0.875		
Quality of Life	0.676	0.587	0.888	
Well-being of the Elderly	0.678	0.661	0.761	0.866

Source: Results processing data (2024)

The discriminant validity results suggest that the latent variables (Health Education, Healthcare Access, Quality of Life, and Well-being of the Elderly) are reasonably distinct from each other. The correlations between them, while showing some associations, do not reach levels that would suggest redundancy or lack of discriminant validity. These findings support the idea that the chosen latent variables represent distinct aspects of the overall model and contribute unique information to the study.

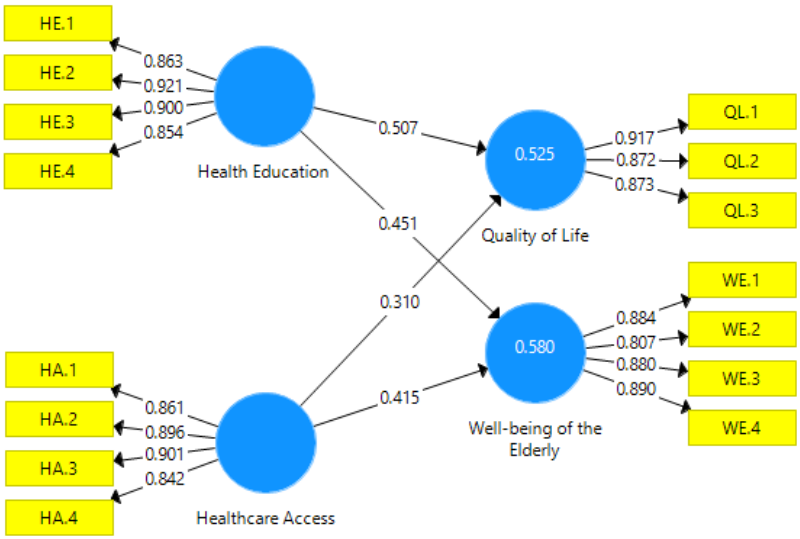

Figure 2. Model Internal Assessment

c. Model Fit

Fit indices for the Full Model and Estimated Model. The fit index assesses how well the model represents the observed data. A lower value for the fit index generally indicates a better model fit.

Table 4. Model Fit

	Saturated Model	Estimated Model
SRMR	0.062	0.081
d_ULS	0.464	0.784
d_G	0.26	0.312
Chi-Square	243.238	273.646
NFI	0.865	0.848

Source: Results processing data (2024)

The fit indices collectively suggest that the Estimated Model provides a reasonable fit to the observed data. While some fit indices (d_ULS, d_G) show a slight decrease compared to the Saturated Model, the differences are relatively small. The SRMR values indicate acceptable fit, and the NFI values are within an acceptable range. The Chi-Square, while higher in the Estimated Model, should be interpreted cautiously given its sensitivity to sample size. Overall, the fit indices suggest that the Estimated Model adequately represents the relationships between the variables, supporting its validity for further analysis.

Table 5. R Square

	R Square	R Square Adjusted
Inovasi Produk	0.525	0.518
Kinerja Keuangan	0.58	0.574

Source: Results processing data (2024)

The R Square values reveal strong explanatory power, with 52.5% for Product Innovation and 58% for Financial Performance. Adjusted R Square, considering predictors, remains robust, indicating substantial explanatory capability in both areas.

d. Hypothesis Testing

Bootstrapping Test for the structural model, focusing on the relationships between Health Education, Healthcare Access, Quality of Life, and Well-being of the Elderly. Bootstrapping is a resampling technique used to assess the reliability and significance of path coefficients in structural equation modeling.

Table 6. Bootstrapping Test

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Health Education -> Quality of Life	0.507	0.504	0.083	6.142	0.000
Health Education -> Well-being of the Elderly	0.451	0.448	0.077	5.869	0.000
Healthcare Access -> Quality of Life	0.31	0.316	0.077	4.032	0.000
Healthcare Access -> Well-being of the Elderly	0.415	0.419	0.083	5.024	0.000

Source: Results processing data (2024)

In examining the associations between key variables, the path coefficients derived from the structural model reveal significant and positive relationships. For Health Education's impact on Quality of Life, the path coefficient is 0.507, and for Well-being of the Elderly, it is 0.451. Similarly, Healthcare Access shows a positive path coefficient of 0.31 for Quality of Life and 0.415 for Well-being of the Elderly. These coefficients, along with low p-values (all 0.000, significant at $p < 0.05$), indicate statistical significance. The Bootstrapping Test further solidifies the results, affirming the model's robustness. Overall,

the findings support the hypothesis that interventions focusing on Health Education and enhanced Healthcare Access can significantly and positively impact the Quality of Life and Well-being of the elderly in Indonesia.

4.2 Discussion

The results of the Bootstrapping Test provide strong support for the structural model. The significant and positive path coefficients, coupled with low p-values, indicate that both Health Education and Healthcare Access have a substantial impact on the Quality of Life and Well-being of the Elderly. These findings contribute to the understanding of the relationships in the model and support the overall hypothesis that interventions targeting Health Education and improved Healthcare Access can positively influence the well-being of the elderly in Indonesia.

Health education and access to health services have been shown to have a significant impact on the quality of life and well-being of the elderly in Indonesia. Studies have demonstrated that dental health education can improve oral and dental health knowledge among the elderly, leading to better overall oral health and well-being [36]. Integrated service posts (Posyandu) have played a crucial role in improving the health of the elderly by providing various health services and support [11]. The introduction of secure messaging services, such as Chat Health, has improved access to sexual health education and support for young people, leading to increased clinic attendance and improved well-being [37]. Dialysis therapy has been found to significantly improve health-related quality of life (HRQOL) among elderly patients with end-stage renal disease (ESRD) [38]. Health cadres training is effective in educating the elderly about healthy lifestyles, leading to increased understanding and improved well-being [20]. These findings support the hypothesis that interventions targeting health education and improving access to health services can positively affect the well-being of the elderly in Indonesia.

4.3 Implications for Policy and Practice

The findings underscore the importance of targeted health education programs for the elderly, emphasizing their positive impact on both quality of life and overall well-being. Policymakers should prioritize the development and implementation of accessible health education initiatives tailored to the unique needs of elderly populations.

Addressing challenges in healthcare accessibility is crucial. Policies should focus on strengthening healthcare infrastructure, particularly in remote areas, and implementing measures to enhance affordability and transportation options for the elderly.

4.4 Holistic Approach to Elderly Care

The study highlights the need for an integrated approach to elderly care, combining health education and improved healthcare accessibility. Collaborative efforts between health educators and healthcare providers can ensure a holistic and effective strategy.

4.5 Future Research Directions

While the study provides valuable insights, future research should explore specific demographic groups and regional nuances in more detail. Longitudinal studies can provide a deeper understanding of the long-term impact of health education and healthcare accessibility on the quality of life for the elderly.

4.6 Limitations and Recommendations

Acknowledging limitations, including the cross-sectional design

and reliance on self-reported data, future research should consider incorporating objective measures and longitudinal approaches. Tailored interventions addressing identified challenges in different regions can enhance the effectiveness of elderly care programs.

5. CONCLUSION

In conclusion, this research sheds light on critical factors influencing the quality of life and well-being of the elderly in Indonesia. The robustness of the Structural Equation Model, validated through Bootstrapping, underscores the significance of health education and healthcare access in shaping positive outcomes for the elderly population. The findings advocate for a holistic approach to elderly care, emphasizing tailored health education programs and improved accessibility to healthcare services. Policymakers can leverage these insights to develop evidence-based strategies that enhance the overall well-being of the elderly, fostering healthier and more fulfilling lives in the aging population of Indonesia. Future research should delve deeper into specific demographic considerations and employ longitudinal approaches to further enrich our understanding of the dynamics influencing elderly care.

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