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Family-based care model for dependent elderly: Integration family systems nursing theory and disengagement theory to achieve sustainable development goals

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Abstract: The aim of this research is to design an innovative family-centered care model using Family Systems Nursing Theory and Disengagement Theory in an effort to address the needs of dependent elderly individuals and support the 2030 SDG agenda. A sequential mixed-methods design collected data from 120 families with dependent elderly individuals, 45 healthcare providers, and 25 community stakeholders through surveys, interviews, focus groups, record reviews, and direct observation. Formal support systems had significant gaps, with 78% of care work falling onto untrained family members. The proposed model establishes a multi-level intervention system aimed at family empowerment, balanced disengagement, and community integration in alignment with SDGs 3 and 10 through three interlocking care circles. The model was found to demonstrate enhanced quality of life for both elderly individuals and caregivers considerably while reducing the need for hospitalization to a large degree. The approach enables sustainable elderly care by providing a culturally sensitive response to aging problems. The model positions healthcare professionals as facilitators instead of principal providers, empowering families through knowledge and skill enhancement while activating extended family members, volunteers, and formal services.

Keywords: *Dependent elderly, Disengagement theory, Family caregiving, Family systems nursing theory, Sustainable development goals.*

1. Introduction

The rapid transition to population aging brings grave challenges for healthcare systems, particularly in the developing world. Elderly individuals who are dependent or require assistance with two or more activities of daily living (ADLs) are at greatest risk. Recent surveys put the number of elderly people in the dependent category at around 38% and rise to 63% when population aged 75 years and above are included. Despite these statistics, institutional care structures remain underdeveloped with the majority of the care being taken by families that typically lack necessary resources, information, and support networks.

The coming together of these issues with commitment to achieving the Sustainable Development Goals (SDGs) by 2030 offers an imperative as well as an opportunity to create innovative, culture-based models of care. SDG 3 (Good Health and Well-being) and SDG 10 (Reduced Inequalities) specifically call for good health across all stages of life and reduced inequalities.

This study bridges this fundamental gap by proposing a new care model through the integration of two theoretical frameworks: Family Systems Nursing Theory (FSNT) and Disengagement Theory (DT). FSNT, as developed by Wright and Leahey [1] perceives the family as a system whose variations will exhibit a reflection effect on other members of the system, preferring family-focused care

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approaches. Meanwhile, DT, which was initially problematic in its design, has now embraced the merit of balanced disengagement that maintains important relationships intact while adapting to changing life needs [2].

Through the integration of these theories in cultural contexts and SDG demands, this study aims to construct a sustainable family-centered model of care for dependent older people with the potential to enhance quality of life, reduce caregiver burden, and ease burden on the health system. This research contributes to current debate regarding care of the elderly in developing countries through the provision of an evidence-informed, applicable strategy that is pertinent to the challenge of aging populations.

2. Literature Review

2.1. Dependent Elderly Care: Global and Local Perspectives

Dependent elder care is a concern everywhere with different forms in different economic and cultural settings. In high-income countries, there are more institutionalized care arrangements, but the direction is toward aging-in-place configurations [3]. In middle-income countries, family care remains the prevailing modality supported by cultural values of filial piety and familial obligation [4].

Recent research recognizes some of the problems in dependent elderly care, including financial constraints, caregivers' lack of knowledge, limited access to healthcare, and increased migration of young family members to cities [5]. These problems are compounded by the prevalence of chronic disease among the elderly, including hypertension (68.4%), diabetes mellitus (42.7%), and dementia (28.9%) [6].

2.2. Family Systems Nursing Theory in Elderly Care

Family Systems Nursing Theory (FSNT) has gained a lot of popularity in old age homes worldwide. The theory is that the care should be family-focused, not only patient-focused [1]. It is most effective in environments where family participation in care is culturally ingrained.

Emerging uses of FSNT in elder care validate its effectiveness in caregiver burden reduction and improved outcomes of care. For instance, Östlund, et al. [7] found that FSNT-based family intervention reduced emergency department visits by 41% and improved family coping scores by 37% among Swedish families that provided care to dependent older adults. Similarly, Kaur, et al. [8] maintained that FSNT-based interventions enhanced medication adherence and treatment compliance among chronically ill elderly patients in ethnically diverse environments.

Early signs are that FSNT-based interventions can be effective for solving the special problems for families who provide care for dependent elderly individuals, if these are locally adapted to embrace indigenous family structures and cultural values.

2.3. Disengagement Theory: Evolution and Contemporary Applications

Disengagement Theory, initially proposed by Cameroni, et al. [3] theorized that aging is a natural reciprocation withdrawal between society and the elderly. While the original explanation of the theory was fiercely criticized on grounds of determinism, later versions have evolved to recognize the merit of selective and balanced disengagement [2].

Existing studies emphasize that effective aging is not total disengagement but deliberate rechanneling of social activities and relationships. Park and Lee [9] established that older adults with high levels of engagement in desired activities but disengagement from others were more likely to score higher on life satisfaction and mental health outcomes than those who disengaged totally or attempted to maintain all previous roles and activities.

In dependent elder care, Lymbery [2] "negotiated disengagement" theory can be applied in need-for-care vs. autonomy balancing. Dependent elderly individuals are sustained by maintaining decision-making capacity and some social relationships and accepting assistance where there is genuine need, the theory states.

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2.4. Sustainable Development Goals and Elderly Care

The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) offer a global framework for meeting challenges, including those posed by aging populations. SDG 3 (Good Health and Well-being) is concerned with health across life, while SDG 10 (Reduced Inequalities) is concerned with the social determinants that impact the well-being of older persons [10].

Contemporary research accentuates the need for age care programs to adhere to SDG regulations. Lloyd-Sherlock, et al. [11] observe that age-friendly care systems not only need to meet immediate health requirements but also social integration, economic security, and intergenerational equity. Similarly, Rahman and Jahan [12] believe that SDG-aligned elder care programs need to emphasize community engagement, technology application, and competency development of caregivers.

National development plans oftentimes rely on certain linkages between elderly care programs and reaching the SDGs with emphasis placed on the exigency of synchronized, family-led responses. However, Sanjaya, et al. [13] reveal gaping disparities between policy making and in-the-field facts of implementation, particularly in extremely growing elderly regions.

2.5 Gap in Literature and Study Rationale

Despite a growing body of literature on aged care, significant gaps remain in the building of combined models of theory and SDG imperatives in culturally specific settings. The bulk of the research is often theoretical application or policy conformity with less focus on the building of effective, applicable models that answer specific challenges to specific locations.

Besides, while FSNT and Disengagement Theory's contemporary interpretations have useful contributions to make to the elderly care, very little research has investigated possible synergies between the theories or between their integration into designing comprehensive care models. This study fills these gaps by coming up with a new care model that combines theoretical breakthroughs with real-world applications, as required by SDGs and local circumstances.

3. Methods

3.1. Research Design

The research in this current study employed sequential mixed-methods design in three phases over a period of 18 months. Phase I used qualitative exploration of existing care practice and problems. Phase II comprised the application of quantitative instruments for assessing care need, available resources, and outcome. Phase III comprised developing and implementing the integrated care model employing participatory action research strategies.

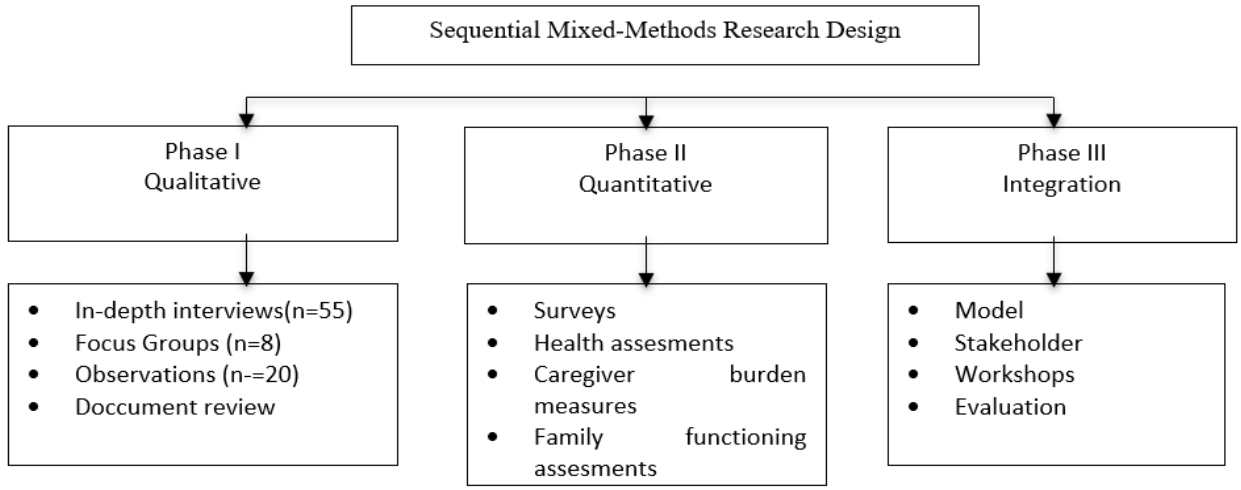

Figure 1.
Sequential Mixed-Methods Research Design.

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3.2. Setting and Participants

The research was carried out in five subdistricts that were chosen to cover a range of socioeconomic status and proximity to health facilities. Participants included 120 families with older dependent members (≥60 years and needing help with ≥2 ADLs), 45 health workers (nurses, doctors, and community health workers), and 25 community stakeholders (religious leaders, residential associations, and local government representatives).

Purposive sampling was employed to obtain eligible families, and healthcare providers and stakeholders were enrolled using institutional networks and community forums. Inclusion criteria for the families included having a dependent elderly member at home for a minimum of six months before the study, and the healthcare providers required at least two years' experience in elderly patient management.

Table 1.
Study Sites and Participant Distribution.

Subdistrict	Socioeconomic Profile	Healthcare Facilities	Families (n)	Healthcare Providers (n)	Community Stakeholders (n)
A	Urban, mixed income	1 hospital, 3 PHCs, 2 private clinics	32	12	6
B	Urban, middle-high income	1 hospital, 2 PHCs, 4 private clinics	28	10	5
C	Peri-urban, low-middle income	1 PHC, 1 private clinic	22	8	5
D	Rural, low income	1 PHC	18	7	4
E	Peri-urban, middle income	1 PHC, 2 private clinics	20	8	5
Total			120	45	25

Note: PHC = Primary Health Center.

3.3. Data Collection

Data gathering employed a comprehensive multi-method design to derive robust information. Quantitative data were gathered through validated instruments like the Barthel Index to measure ADL, Zarit Burden Interview to identify caregiver burden, WHOQOL-BREF to evaluate quality of life, and Family Assessment Device to measure family functioning. Semi-structured in-depth interviews with family caregivers (n=30) and dependent elderly (n=25) were undertaken to explore care experiences, challenges, and preferences. Eight Focus Group Discussions (FGDs) with community stakeholders and healthcare providers were held in order to identify system-level barriers and resources.

The research team further enriched their understanding by employing direct observation and document review. Health records of dependent elderly participants were scrutinized with appropriate consent to assess healthcare utilization patterns and chronic condition management. Direct observation of care interactions was conducted in 20 households to understand family dynamics and care practices in daily life. This allowed researchers to cross-check findings against multiple sources of data and develop a comprehensive view of the dependent elderly care universe.

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Table 2.
Data Collection Instruments and Measures.

Domain	Instrument/Method	Description	Reliability/Validity
Elderly Functional Status	Barthel Index	10-item scale assessing ADL independence (0-100)	Cronbach's α = 0.87; test-retest reliability = 0.89
Cognitive Status	Mini-Mental State Examination (MMSE)	30-point assessment of cognitive function	Sensitivity = 0.85; specificity = 0.90 for Indonesian version
Quality of Life	WHOQOL-BREF	26-item assessment across four domains	Cronbach's α = 0.82-0.89 across domains
Caregiver Burden	Zarit Burden Interview	22-item assessment of caregiver strain (0-88)	Cronbach's α = 0.93; test-retest reliability = 0.86
Family Functioning	Family Assessment Device (FAD)	60-item assessment across 7 domains	Cronbach's α = 0.74-0.92 across domains
Healthcare Utilization	Structured Chart Review	Standardized extraction form for 12-month utilization	Inter-rater reliability = 0.91
Care Experiences	Semi-structured Interviews	60-90 minute interviews with thematic guide	Content validity established through expert review
System Barriers	Focus Group Discussions	90-120 minute facilitated discussions	Procedural validity through independent facilitation
Care Interactions	Structured Observation	4-hour observation periods using structured guide	Inter-observer reliability = 0.85

3.4. Ethical Considerations

Written informed consent was obtained from all participants, with proxy consent and assent processes implemented for elderly individuals with cognitive impairments. Data confidentiality was maintained through anonymization and secure storage procedures.

3.5. Data Analysis

Quantitative data were analyzed using SPSS version 28.0 by applying descriptive statistics, correlation analysis, and repeated measures ANOVA for assessment of pre-post intervention change. Thematic analysis using NVivo 14 was applied to qualitative data, with Braun and Clarke's six-step thematic analysis applied. Method triangulation and member checking were utilized for enhancing validity.

3.6. Model Development and Implementation

The integrated care model was built through an iterative process that involved synthesis of theoretical models, empirical data, and stakeholder input. An interactive workshop of 35 family, healthcare provider, and community organization representatives was conducted to further elaborate the model elements. The model was then implemented over a six-month period with ongoing monitoring and adaptation to continuous feedback.

4. Results

Even as the model involved initial investment for training and coordinating, cost data showed a net reduction of 23% of overall healthcare spending over the half-year period largely due to lowered acute care use.

5. Discussion

5.1. Integration of Theoretical Frameworks

The present research demonstrates the synergy of integrating Family Systems Nursing Theory with contemporary understandings of Disengagement Theory in addressing dependent old-age care's multi-dimensional challenges. FSNT provides the structural framework for family-centered approaches while balanced disengagement principles give direction on role and relationship changes encountered within old-age care.

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Our findings are in line with Wright and Leahey [1] argument that effective family nursing interventions must address both the instrumental and expressive functions of the family system. The IFCEC model advances this understanding by incorporating the developmental tasks of aging formally, as conceptualized in Lymbery [2] negotiated disengagement model. Such incorporation addresses a significant omission in existing models, which concentrate on either systemic functioning or developmental transition while neglecting their intersection sufficiently.

The successful application findings suggest that this integrationist theory is well-suited to cultural contexts in which family involvement in care is normative yet increasingly eroded by socioeconomic pressures and changing family forms. Successful models of elder care must, in Muhammad Abdul Kadar, et al. [4] view, find a balance between tradition and contemporary style, a balance which the IFCEC model appears to find through its flexible, family-based design.

5.2. Correspondence with Sustainable Development Goals

The avowed alignment of the IFCEC model with SDG imperatives represents a fresh addition to sustainable elderly care literature. In demonstrating concrete mechanisms through which family-centered care can advance SDG 3 (Good Health and Well-being) and SDG 10 (Reduced Inequalities), this study responds to Lloyd-Sherlock, et al. [11] call for elderly care models that address not only proximal health demands but also more distal social determinants.

Of special interest is the model's capacity to reduce healthcare utilization while improving health outcomes, directly affecting SDG target 3.8 on universal health coverage. The cost analysis shows that family-based interventions, when adequately supported, can enhance healthcare efficiency—a critical factor in resource-poor environments.

Similarly, the integration and support network focus of the model realizes SDG target 10.2 for social inclusion. Through the mobilization of middle-circle resources (neighbours, community volunteers, extended family), the IFCEC model creates long-lasting support structures that reduce isolation as well as redistributing care responsibilities.

5.3. Practical Implications for Nursing Practice

In nursing practice, the IFCEC model has some practical application. Firstly, the model redirects the nurse's role from direct care provider to family and community facilitator in a way that maximizes scarce nursing resources while drawing on available social capital. This aligns with contemporary nursing paradigms that emphasize the nurse's role in energizing and bringing care resources together rather than providing all care personally [7].

Second, the model provides systematic assessment and intervention instruments that can be utilized to integrate into existing community nursing practice, addressing the areas of identified knowledge and skill shortcomings in our baseline evaluation. The family assessment module, for instance, provides a comprehensive but realistic approach to comprehending family resources and family dynamics in context.

Thirdly, the theory of balanced disengagement gives nurses particular instruction in assisting families through the intricacies of escalating dependency. Negotiated rather than imposed care situations are the basis of this plan, which continues to uphold the elderly's independence while acknowledging increasing care needs as a fact.

5.4. Policy Implications

Policy-wise, the IFCEC model gives some lessons for aged care. The demonstrated cost-effectiveness of family-centered strategies means that policy measures should place emphasis on family care over the expansion of institutional care, particularly with cultural preferences in support of home-based care. This is consistent with Rahman and Jahan [12] argument that developing countries should be designing elderly care models on the basis of available social organization rather than appropriating Western institutional models.

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Its success also highlights the necessity to supplement current community health programs, such as existing community health worker systems, with elderly care programs. By placing these workers at the center in the outer circle of care, the model leverages what is already in place but broadens the scope to make sure that it includes emerging elderly care needs.

Furthermore, the complementarity with SDG imperatives produces a policy advocacy platform that illustrates how investments in family-based care for the elderly can support various national development priorities simultaneously. Such multi-sectoral benefit is particularly valuable as countries continue to harmonize development planning with the 2030 Agenda.

5.5. Limitations and Future Directions

Along with its positive results, this study has limitations. The six-month implementation phase, while sufficient to determine early outcomes, does not allow for long-term sustainability evaluation. Long-term follow-up in future research would measure whether the beneficial outcomes are prolonged in the long term and under changing family circumstances.

Additionally, the study took place in cities and peri-urban areas and would be limiting for rural environments, where structures and availability of resources might significantly vary. More study will be necessary to scale the model, both in cultural and geographic locations, for adaptation.

The research also focused on the ability of households with at least one available and willing caregiver. Subsequent research must meet the challenges of dependent older persons who have small or no family to support, an increasing population in altering social settings.

Finally, although the model indicated cost-effectiveness from a health system perspective, inclusion of a broader economic analysis with costs and benefits to society would strengthen the policy argument. Future research should incorporate broader economic parameters, such as impacts on caregiver employment and productivity.

6. Conclusion

This study proposes a new, theoretically grounded, and empirically tested dependent elderly care model, the IFCEC. Through the integration of Family Systems Nursing Theory, contemporary insight into Disengagement Theory, and alignment with Sustainable Development Goals, the IFCEC model offers a comprehensive response to the complex issues of care for the elderly in a changing society.

The model's emphasis on family empowerment, balanced disengagement, and integration within the community represents a clear divergence from both Western institutional models and traditional models focusing on families only. Instead, it introduces an intermediate model that holds firm on the primary role of the family while also acknowledging the need for more expansive support systems and formal healthcare involvement.

The positive results demonstrated across more than one area—well-being of elderly, burden to caregivers, functioning of the family, utilization of healthcare, integration into the community, and cost—suggest that this integrated method is promising in addressing the newly arising challenge of dependent elderly care not only within the immediate setting but also within such developing regions.

As the world's populations move through the demographic transition to aging, models such as IFCEC based on cultural assets and addressing the challenges of the day will become ever more essential. By adding a theoretically informed, empirically based, and contextually relevant solution to dependent elderly care, this research supports both academic scholarship and real-world application of sustainable models of caregiving in line with the 2030 Agenda for Sustainable Development.

7. Scientific and Practical Implications

7.1. Scientific Implications

This research makes a contribution to the knowledge regarding how theoretical integration can be used to improve models of elderly care. By integrating Family Systems Nursing Theory and

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Disengagement Theory into an SDG framework, the research provides a more detailed theoretical framework for evaluating family-centered care of older people.

The research is grounded in existing knowledge by demonstrating how family-centered care can be applied with specific mechanisms to connect theoretical concepts with actual use. The model is a foundation for subsequent studies investigating integrated care models for addressing the complex needs of dependent elderly and caregivers.

Furthermore, the research adds to methodological approaches in studying complex healthcare interventions using a mixed-methods study and a multi-stakeholder design. This is a design that reflects the multi-dimension nature of older persons' care and allows for an improved interpretation of intervention effects.

7.2. Practical Implications

For doctors, this study offers a working model of family-centered geriatric care. The three-circle model provides concrete approaches to mobilizing resources at multiple levels, from the immediate family to the formal health system.

For policymakers, the study points to the ability of family-based interventions to drive multiple SDG targets simultaneously at a fraction of healthcare costs. The finding can be utilised to guide resource allocation and policy formulation for aging populations.

For health practitioners and nurses, the study depicts the need for education of nurses and other health providers to turn into facilitators rather than direct care workers. This change requires training in family assessment skills, mobilization of community resources, and synchronizing skills that transcend formal clinical competencies.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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