

Profile of BPSD in Elderly People with Dementia at UPTD Griya Werdha Jambangan Surabaya

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DOI: <https://doi.org/10.52403/ijrr.20240101>

ABSTRACT

Background: One of the many factors that can complicate providing care for a person with dementia is BPSD, which affects 90% of those with the disease and appears to put more stress on caregivers. It is considerably harder to manage some BPSD types than others. When BPSD therapy is insufficient, people with dementia - especially those living in care facilities - frequently have a worse quality of life.

Objective: To understand the profile of BPSD in elderly people with dementia at UPTD Griya Werdha Jambangan Surabaya.

Method: The research was conducted through interviews with elderly people and their caregivers at UPTD Griya Werdha Jambangan Surabaya in May–June 2023, using the MoCA-*Ina* and NPI-NH questionnaire. Descriptive analysis was performed to outline the distribution of presentation and frequency for each research variable.

Results: The number of elderly people who met the criteria was 27, while the number of elderly caregivers interviewed was 4. The most common BPSD experienced by most elderly people with dementia was irritability/lability. BPSD with the highest occupational disruptiveness was agitation. Anxiety was the domain with the highest average scores. BPSD was more commonly found in women, while irritability/lability was the most common

symptoms in both genders. Furthermore, irritability/lability is the most prevalent BPSD across all age groups.

Conclusion: Out of 27 elderly people with dementia, the most common BPSD was irritability/lability. In order to improve dementia treatments and to enable dementia elderly caregivers provide the best care possible for the elderly, it is suggested that more data and research - especially qualitative research - relating to dementia and BPSD in Indonesia need to be collected.

Keywords: Dementia, Behavioral and Psychological Symptoms of Dementia (BPSD), Neuropsychiatric Inventory (NPI), elderly, caregivers, nursing home, mental disorder

INTRODUCTION

Dementia is a common mental disorder among the elderly. According to the World Alzheimer Report^[1], every three seconds one person develops dementia and the number of people with dementia will continue to increase, especially in developing countries such as Indonesia. Dementia causes the sufferer to experience progressive cognitive decline resulting in dependence to be able to perform daily functions and the elderly become more vulnerable socially, physically, and mentally^[2].

Paola Barbarino, CEO of Alzheimer Disease International, in 2021 said that dementia is currently the seventh most common cause of death worldwide and one of the most expensive conditions for society^[3]. The cost of dementia increases as the severity of dementia increases and generally consists of the cost of care, drugs, productivity losses, early retirement, and others^[4]. Another factor that contributes to the increasing cost of caring for older people with dementia is the institutionalization of older people, which occurs in a total of 25.3% of older people with dementia^[5]. Older people with dementia are institutionalized due to the burden felt by their caregivers^[6].

One of the biggest factors associated with caregiver burden is Behavioral and Psychological Symptoms of Dementia (BPSD)^[7-8]. BPSD consists of 12 domains of non-cognitive symptoms and behaviors that occur in 90% of older adults with dementia^[9]. BPSD is considered more difficult for caregivers to manage due to its unpredictable and disruptive symptoms^[10].

In the care of older people with dementia, some specific BPSD domains have proven to be more challenging than others^[11] and the lack of clear guidelines regarding BPSD therapeutic strategies often worsens the treatment context^[12]. This has led to institutionalized older people with dementia being reported polymedicated and prescribed antipsychotics related to the presence of BPSD, which has caused more harm than good^[13]. Whereas non-pharmacological approaches based on caregiver interventions have been shown to have a greater effect than pharmacological therapies, it is difficult to do so because of the many types of BPSD that appear^[12].

Therefore, specific knowledge and training on BPSD is important for caregivers, especially in institutionalized elderly with dementia. However, there is still very little research and data on dementia and BPSD in Indonesia. This study aims to describe the BPSD profile in one nursing home that has a large number of elderly people in Surabaya, Indonesia, with the hope that it can be

useful in the care of elderly people with dementia and BPSD treatment in the future.

MATERIALS & METHODS

This research was conducted at UPTD Griya Werdha Jambangan in May - June 2023. The research was approved by the Health Research Ethics Committee of the Faculty of Medicine, Airlangga University number 73/EC/KEPK/FKUA/2023 on March 20, 2023 and the Surabaya City Government's One-Stop Integrated Service and Investment Office (DPM-PTSP) with number 500.16.7.4/946/S/RPM/436.7.15/2023 on March 6, 2023. UPTD Griya Werdha Jambangan has 14 rooms divided into 3 blocks with each room filled with 8-10 elderly people according to their level of independence. Elderly caregivers work according to shifts with the division of the number of caregivers in each block being 2-3 people on the morning shift, 3-4 people on the afternoon shift, and 2 people on the night shift.

The population in this study were elderly people and elderly caregivers at UPTD Griya Werdha Jambangan Surabaya. The sample size of the study was calculated using the Slovin Formula with the number of independent elderly people in the nursing home was 95 people with a margin of error of 5%, so that the minimum sample size was 77 people. However, this number could not be met because there were only 27 elderly people who met the criteria to become research subjects. The variables studied were age, gender, dementia, and 12 BPSD domains based on the Neurosychiatric Inventory - Nursing Home (NPI-NH) questionnaire, as well as the frequency, severity, and occupational disruptiveness of each BPSD.

Data collection was carried out by reviewing nursing home data to collect the data and identity of each elderly person, then interviewing the elderly to fulfill the data on the demographic sheet, to assess the independence of the elderly with the Barthel Index questionnaire, and to screen for dementia using the MoCA-Ina

questionnaire. Interviews were conducted for 20-30 minutes in the afternoon and evening according to the visiting hours and time availability of the elderly. The elderly who became the subject of this study were elderly with dementia (MoCA-Ina score ≤ 26), independent, and able to cooperate in the interview. Then, caregivers of the elderly with dementia were interviewed using the NPI-NH questionnaire to collect data on BPSD in each elderly. The interview was conducted for 20-30 minutes in the evening.

STATISTICAL ANALYSIS

Quantitative data obtained from interviews were then analyzed univariately to describe

descriptively the frequency distribution and proportions of each research variable.

RESULT

Table 1 Distribution by gender of the elderly

	Male	Female	Total
Elderly that become research subjects	13	14	27
Elderly with BPSD	2	9	11

Of the total 95 elderly people who are classified as independent at UPTD Griya Werdha Jambangan, there are 27 elderly who fulfil the inclusion criteria and become research subjects, and the number of elderly people who have BPSD based on NPI-NH interviews with caregivers is 11 people (11.58% of the total number of independent elderly and 40.74% of the number of elderly people who are research subjects).

Table 2 Distribution based on characteristics

Characteristics	Number of non-BPSD elderly	Number of elderly with BPSD	Total	Percentage
Elderly age range				
60-69	5	6	11	40,74
70-79	6	4	10	37,04
80-89	5	1	6	22,22
Education history				
Not graduated from elementary school	2	2	4	14,82
Elementary school/equivalent	5	4	9	33,33
Junior high school/equivalent	2	1	3	11,11
Senior high school/equivalent	5	3	8	29,63
S1/equivalent	1	-	1	3,70
No data	1	1	2	7,41
How they enter the nursing home				
Suggested by people around/living alone	7	4	11	40,74
Submitted by their child/family	5	2	7	25,93
By personal will	4	2	6	22,22
Transferred from other nursing home	-	2	2	7,41
Loss of residence	-	1	1	3,70
Family/relatives/friend visit				
There is	7	4	11	40,74
None	9	7	16	59,26
Job history				
Employees	5	3	8	29,63
Merchant	3	3	6	22,22
Housemaid	2	1	3	11,11
Housewife	1	1	2	7,41
Handyman	1	1	2	7,41
Construction worker	1	1	2	7,41
Teacher	-	1	1	3,70
Self-employed	1	-	1	3,70
Soldiers	1	-	1	3,70
No data	-	1	1	3,70
Disease history				
Hypertension	6	5	11	40,74
Smoking	7	2	9	33,33
Cholesterol	-	1	5	18,52
Alcohol	2	-	2	7,41
Diabetes	-	1	1	3,70
Head injury	1	-	1	3,70

The average age of the 27 elderly people is 71.38 years with the youngest age being 60 years and the oldest age being 88 years. The median age of the elderly is 70.5 years with the mode of data being 63 years, 69 years,

and 71 years with 3 people each. In addition, there were more elderly who were not visited than those who were visited. Visits from family, relatives or friends are rarely regular.

Table 3 MoCA-Ina score result data

MoCA Score	Number of non-BPSD elderly	Number of elderly with BPSD	Total	Percentage
6-10	1	2	3	11,11
11-15	5	3	8	29,63
16-20	7	5	12	44,44
21-25	4	-	4	14,81

The mean MoCA-Ina score of the 27 older adults interviewed was 16.67 with the highest score of 23 and the lowest score of 9

out of a maximum score of 30. Therefore, all 27 older adults interviewed scored below 26 and were considered to have dementia.

Table 4 Distribution of MoCA score based on education history

Education history	MoCA score				Total
	6-10	11-15	16-20	21-25	
Not graduated from elementary school	-	1	3	-	4
Elementary school/equivalent	2	4	1	2	9
Junior high school/equivalent	1	-	2	-	3
Senior high school/equivalent	-	3	4	1	8
S1/equivalent	-	-	-	1	1
No data	-	-	2	-	2

Since only one elderly person in the study sample had a history of >12 years of education, the other 26 elderly people were

corrected by adding 1 point to their MoCA score.

Table 5 Distribution of MoCA scores per cognitive domain

Cognitive domain	Average score	Maximum score	Average/maximum	n maximum (N=27)	n minimum (N=27)
Visuospatial/ executive	2,14	5	42,8	0 (0)	3 (11,11)
1	0	1	0	0 (0)	27 (100)
2	0,14	1	14	4 (14,81)	23 (85,19)
3	2	3	66,67	10 (37,04)	3 (11,11)
Naming	2,81	3	93,67	23 (85,19)	0 (0)
Attention	3,62	6	60,33	0 (0)	0 (0)
1	1	2	50	8 (29,63)	8 (29,63)
2	0,51	1	51	14 (51,85)	13 (48,15)
3	2,11	3	70,33	11 (40,74)	2 (7,41)
Language	0,96	3	32	0 (0)	11 (40,74)
1	0,96	2	48	10 (37,04)	11 (40,74)
2	0	1	0	0 (0)	27 (100)
Abstraction	0,4	2	20	2 (7,41)	18 (66,67)
Memory	0,96	5	19,2	1 (3,70)	17 (62,96)
Orientation	4,85	6	80,83	12 (44,44)	1 (3,70)

Description: n maximum is the number of elderly who get the maximum score

n minimum is the number of elderly who get the minimum score

The score per domain is the sum of the score of each of its elements

The visuospatial/executive domain consisted of 3 separate questions, as well as attention domain, and language domain consisted of 2 separate questions. The most difficult questions to answer by the elderly were question 1 of the visuospatial/executive domain and question

2 of the language domain because none of the elderly could answer both questions correctly. While the easiest question to answer was the naming domain with a total of 23 people answering correctly. The cognitive domains that are most easily done by the elderly are naming and

orientation which can be answered maximally by 85.19% and 44.44% of the elderly respectively. On the other hand, for the visuospatial/executive, attentional, and

language domains, no elderly could answer maximally. Even in the abstraction domain, more than half of the elderly (66.67%) could not answer the question at all.

Table 6 Distribution of BPSD by gender, frequency, severity, NPI-NH score, and occupational disruptiveness

BPSD	Male	Women	Total (%)	Average frequency	Average severity	Average domain score	Average occupational disruptiveness
Delusions	1	1	2 (18,18)	2,5	1	2,5	-
Hallucinations	1	-	1 (9,09)	1	1	1	-
Agitation/aggression	1	2	3 (27,27)	2,33	1,67	3	3
Depression/disphoria	1	1	2 (18,18)	2	2	2	-
Anxiety	-	4	4 (36,36)	2,75	1,75	4,75	0,25
Elation/euphoria	-	-	-	-	-	-	-
Apathy/indifference	-	2	2 (18,18)	4	1	4	0
Disinhibition	-	-	-	-	-	-	-
Iritability/lability	2	6	8 (72,73)	2,125	2	4,625	1,75
Abberant motor behavior	-	-	-	-	-	-	-
Sleep and nighttime behavior disorder	-	1	1 (9,09)	3	1	3	-
Appetite and eating disorder	-	-	-	-	-	-	-

Description: The domain score is the result of multiplying the frequency and severity per symptom, the maximum value of the domain score is 12

The most common BPSD is irritability, as many as 8 out of 11 elderly people who have BPSD (72.73%). Followed by anxiety which is owned by 4 people (36.36%) and agitation which is owned by 3 people (27.27%). Of the 9 women who have BPSD, some of the symptoms that are mostly owned by elderly women are irritability / lability owned by 6 people (66.67%), then followed by anxiety / anxiety owned by 4 people (44.44%). Then of the 2 elderly men who have BPSD, irritability / lability is also the most common symptom, which is owned by 2 people (100%), while the other 4 symptoms are only owned by 1 elderly man.

The BPSD that had the highest average frequency of occurrence was apathy/indifference, which scored 4 out of 2 people who had it. A score of 4 on frequency means that essentially this symptom is essentially continuously

present. Meanwhile, the symptom that had the highest average severity was irritability/lability with an average score of 2 out of 8 people who had it. A score of 2 means that the patient is almost always irritable and this behavior is nearly impossible to change. Depression/dephoric also has an average severity score of 2 out of 2 people who have it, but with a different meaning from agitation, namely depression is very upsetting and stressful for the resident and is very difficult or impossible to change.

Based on the results of the average work disruptiveness, agitation is considered more disturbing to work with an average score is 3 or “moderately”, which means that elderly agitation disrupts work routine and requires time rebudgeting. Meanwhile, the highest average domain score was in the anxiety/anxiety domain with a value of 4.75 out of 4 elderly people who experienced it.

Table 7 Distribution of BPSD individual and age range

Age range	BPSD (frequency-severity-occupational disruptiveness)								Skor NPI-NH
	Delusions	Hallucinations	Agitation/aggression	Depression/dysphoria	Anxiety	Apathy/indifference	Iritability/lability	Sleep and nighttime behavior disorders	
60-69									

years									
C03 (61)					2-2-1		3-3-1	3-1-0	16
B02 (63)							3-3-4		9
C08 (67)				3-3-0	3-3-0		3-3-3		27
B01 (69)							1-1-0		1
C02 (69)			3-1-1			4-1-0	3-1-1		10
C05 (69)			3-1-0		3-1-0				6
Total	-	-	2	1	3	1	5	1	
70-79 years									
A10 (71)			1-3-5				1-3-5		6
C04 (73)					3-1-0				3
C01 (74)							2-1-0		2
C09 (74)	3-1-0					4-1-0			7
Total	1	-	1	-	1	1	2	-	
80-89 years									
A11 (80-an)	2-1-0	1-1-0		1-1-0			1-1-0		5
Total	1	1	-	1	-	-	1	-	

Description: code A for male elderly, code B and C for female elderly

The following are the results of the NPI-NH interview data of 11 elderly people who have BPSD with 8 related domains. The highest NPI-NH score recorded was 27 by elderly female C08. However, only her irritability interferes with work routines and requires special time or can be grouped with a work interference score of 3. On the other hand, the elderly with the lowest NPI-NH score was B01 with a score of 1. In all age groups, the symptoms that were mostly found were irritability / lability, except in the 80-89 age group because only 1 elderly person was represented.

DISCUSSION

In this study, the most common behavioral disorder found in elderly with dementia was irritability/lability (8; 72.73%), followed by anxiety (4; 36.36%) and agitation (3; 27.27%). These results are not the same as some other studies that have different data on the most common behavioral disorders. As in the results of systematic reviews and meta-analyses, the most common behavioral disorder was apathy/indifference (49%), while irritability was one of the least

common behavioral disorder (36%)^[14]. In Shanghai nursing homes, the most common behavioral disorder was sleep disturbance (21.9%), followed by irritability (19.6%)^[15]. These different results indicate the possible influence of cultural background and psychosocial environment, especially when compared to the results reported in the US, UK, Japan, South Korea, China, Taiwan, and Thailand which have different prevalence and patterns of BPSD^[15-16]. On the other hand, data on the prevalence of BPSD in Indonesia is still very limited. In addition, irritability can be the most prominent BPSD for caregivers compared to other symptoms, as irritability can be categorized into the "hyperactivity" symptom of dementia which is associated with higher stress levels in caregivers and earlier placement in long-term care facilities such as nursing homes^[17].

The highest average domain score was in the anxiety/anxiety domain with a score of 4.75 out of 4 elderly people who experienced it. This was followed by the other domains of irritability/lability (4.625) and apathy/indifference (4). However, other

studies reported the highest domain results and different NPI scores, such as apathy with a value of ± 2.3 [18] or with a value of 3.17 [19], as well as changes in appetite with a value of 6.53 [11]. Other studies also further explained that the NPI score is related to the severity of dementia [19], activities of daily living (ADL) score, and educational history of the elderly [15].

According to the caregiver, the BPSD domain that has the highest work disruptiveness score is agitation with a score of 3 or moderate, which means that agitation disrupts work routine and requires time rebudgeting. Agitation is indeed one of the domains of BPSD that cause high work interference compared to other domains, both in the elderly living in the community, as well as those living in nursing homes [11, 20-22]. Agitation in older people with dementia may arise from unmet needs due to difficulties in communicating needs and self-care, discomfort with the environment, or pain that may be experienced. However, a lack of understanding of the basic needs of older adults with dementia may lead some formal caregivers to perceive disruptive behaviors as "disruptive" or "threatening," and hinder proper management, which can cause stress among caregivers [20].

In addition, BPSD was found more in women, although the number of elderly men and women who became research subjects was not much different, namely 13 and 14 respectively. This is indeed in accordance with other studies which found that there was a significant difference in the gender distribution of elderly subjects who had BPSD, with a ratio of men and women of 37/61 [18].

In its distribution by gender, the most common BPSD found in male and female elderly is the same, namely irritability/lability. According to the Alzheimer's Association Report [23], there is no difference by gender in the presence of BPSD and its overall severity. However, in terms of specific symptoms, women are more commonly associated with depressive symptoms and psychotic symptoms, such as

delusions and more severe aberrant motor behavior, while apathy is found to be more severe in men. Another study also stated that apathy and anxiety were reported to be more prevalent in males, while delusions were more common in females [24]. But unfortunately in this study, there were no results that could support the statements of previous studies.

In its distribution according to age, it was found that the elderly with the age group 60-69 years had the most irritability / lability (5 people; 83%), which was also in the age group 70-79 years (2 people; 50%). Other studies have found no significant difference in age between the elderly who have BPSD, the elderly who do not have BPSD, or even the healthy elderly [18]. On the other hand, in a study that focused on the NPI score of the elderly, the results also stated that the NPI score was not significantly related to the age group of the elderly [15].

CONCLUSION

In the research conducted on 27 elderly people with dementia at UPTD Griya Werdha Jambangan, the following conclusions were obtained:

1. BPSD experienced by most elderly dementia are irritability/lability, followed by anxiety and agitation/aggression.
2. BPSD domain that has the highest average score is anxiety.
3. BPSD with the highest occupational disruptiveness score is agitation.
4. BPSD are found more in elderly women, with symptoms that are found in both genders are the same, namely irritability / lability.
5. In all age groups, the most common BPSD was irritability/lability.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Natasha Misyelle Putri, Erikavitri Yulianti, Samsriyaningsih Handayani, Novira Widajanti. Profile of BPSD in elderly people with dementia at UPTD Griya Werdha Jambangan Surabaya. *International Journal of Research and Review*. 2024; 11(1): 1-9. DOI: <https://doi.org/10.52403/ijrr.20240101>
