A Multivariate Study on the Contributing Factors of Anxiety

Introduction

This report investigates the contributing factors of anxiety among elderly individuals using statistical analysis on data from the ELSA Wave 7 dataset. The aim is to understand how various life factors, such as mood swings, social isolation, life satisfaction, and participation in social activities, influence anxiety. The dataset contains responses from 1011 individuals, and statistical techniques like Chi-square tests and binary logistic regression were applied to derive insights.

Aim

The study aimed to explore how various life factors impact anxiety among elderly individuals, testing six hypotheses based on previous research. Here's a breakdown:

1. **H0 - Age and Sex**: The hypothesis proposed that age and sex are significantly associated with anxiety. Results showed **no significant relationship** between anxiety and these demographic factors (age: p = 0.757; sex: p = 0.262), suggesting that neither age groups nor gender plays a critical role in anxiety levels among the elderly.
2. **H1 - Isolation**: Isolation was hypothesized to be significantly associated with anxiety. This hypothesis was supported by the results (p = 0.014), where individuals who often felt isolated were found to have a higher likelihood of experiencing anxiety.
3. **H2 - Loneliness**: The hypothesis proposed loneliness as a significant factor in anxiety. However, the findings did not support this (p = 0.270), indicating that loneliness alone was not strongly linked to anxiety in this population.
4. **H3 - Mood Swings**: Mood swings were hypothesized to be strongly associated with anxiety, and the results confirmed this (p < 0.001). Individuals experiencing mood swings had a notably higher likelihood of anxiety, making it one of the most significant factors.
5. **H4 - Life Satisfaction**: It was hypothesized that life satisfaction levels influence anxiety. The findings partially supported this (p = 0.017), with individuals reporting dissatisfaction or dissatisfaction trends showing higher anxiety rates.
6. **H5 - Socialisation**: This hypothesis suggested that socialization significantly impacts anxiety. Results supported this (p = 0.035), revealing that individuals not participating in social organizations or activities were 1.4 times more likely to experience anxiety.

Data Source

The study used the ELSA Wave 7 dataset, based on a longitudinal study of ageing in England (2002-2015). A sample of 1,011 elderly individuals who underwent psychiatric evaluation for anxiety was selected. Variables included categorical variables (e.g., sex, mood swings, isolation, life satisfaction) and a continuous variable (age).

Data Preparation

The age variable was recoded into categories: Below 55, 55-64, 65-74, and Above 74. Negative values were excluded using SPSS's "Select Cases" function to ensure data validity.

Statistical Analysis

- **Chi-Square Test:** Conducted to identify significant associations between independent variables and anxiety ($p < 0.05$).
- **Binary Logistic Regression:** Applied to significant variables to measure the strength of their association with anxiety. A 95% confidence interval was used to minimize false positives.

Table 1: Chi-Square Test Results for Variables Associated with Anxiety

		Psychiatric problem has : Anxiety					p - value (type)	Type of test used	df	χ^2
		Mentioned		Not Mentioned		Total				
		N	%	N	%		0.757	Pearson Chi-Square	4	1.885
Age	Below 55	72	52.2 %	66	47.8 %	138				
	55 - 64	207	49.9 %	208	50.1 %	415				
	65-74	176	54.3 %	148	45.7 %	324				
	Above 74	63	49.6 %	64	50.4 %	127				
Sex	Male	193	54.1 %	164	45.9 %	357	0.262	Continuity Correction	1	1.260
	Female	328	50.2 %	326	49.8 %	654				
Respondent is NOT a member of any organisations, clubs or societies	0	274	48.8 %	288	51.2 %	562	0.017	Continuity Correction	1	5.689
	1	148	58.0 %	107	42.0 %	255				
Psychiatric problem has : mood swings	Not Mentioned	429	49.0 %	446	51.0 %	875	<0.001	Continuity Correction	1	15.599
	Mentioned	92	67.6 %	44	32.4 %	136				
How often respondent feels isolated from others	Hardly ever or never	218	49.3 %	224	50.7 %	442	0.014	Linear-by-linear association	1	6.054
	Some of the time	148	51.6 %	139	49.4 %	287				

	Often	66	64.7%	36	35.3%	102				
CASP19 scale: How often feels satisfied with the way their life has turned out	Often	130	49.4%	133	50.6%	263	0.017	Linear-by-linear association	1	5.715
	Sometimes	174	49.0%	181	51.0%	355				
	Not often	101	61.6%	63	38.4%	164				
	Never	32	59.3%	22	40.7%	54				
How often respodent feel lonely	Hardly ever or never	229	52.2%	210	49.8%	439	0.270	Linear-by-linear association	1	1.217
	Some of the time	134	47.0%	151	53.0%	285				
	Often	75	62.5%	45	37.5%	120				

Table 1 shows the results of Chi-square tests to evaluate the association between various variables and anxiety among elderly individuals.

Key Results:
1. Mood Swings (p<0.001): Strong association; individuals with mood swings reported significantly higher anxiety levels.
2. Social Participation (p=0.017): Those not involved in organizations or clubs were more likely to experience anxiety.
3. Isolation (p=0.014): Frequent feelings of isolation were significantly associated with anxiety.

Non-significant results for variables like age and sex suggest that these demographic factors are not strongly associated with anxiety in this population.

Table 2: Binary Logistic Regression Results for Anxiety Factors
The image below represents the Binary Logistic Regression results:

Independent Variable (Reference Category)	Categories	Odds Ratio (95% CI)	p-value
Respondent is NOT a member of any organisations, clubs or societies (0)	1	1.399(1.024 - 1.910)	0.035
Psychiatric problem has : mood swings (Mentioned)	Not Mentioned	0.433(0.205 - 0.706)	<0.001
CASP19 scale: How often feels satisfied with the way their life has turned out (Often)	Sometimes	0.944(0.669 - 1.332)	0.744
	Not often	1.247(0.789 - 1.971)	0.345
	Never	0.929(0.464 - 1.858)	0.835
How often respondent feels isolated from others (Often)	Some of the time	0.725(0.426 - 1.235)	0.237
	Hardly ever or never	0.754(0.451 - 1.262)	0.283

Table 2 presents the binary logistic regression results, highlighting the predictive power of significant variables.

Key Insights:
1. Mood Swings: Individuals without mood swings were 56.7% less likely to experience anxiety (p<0.001).
2. Social Participation: Lack of participation in organizations increased anxiety risk by 40% (OR=1.399, p=0.035).
3. Life Satisfaction: Dissatisfaction with life showed trends of association but was not consistently significant across all categories.

The regression model underscores the critical role of mood swings and social participation in predicting anxiety.