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#### Varnam Radhika

MSc, Research Student,  
Department of Resource  
Management and Consumer  
Sciences, College of Community  
Science, Hyderabad, Professor  
Jayashankar Telangana State  
Agricultural University,  
Telangana, India

#### Dr. D Ratna Kumari

Professor, Department of Family  
Resource Management, College  
of Community Science,  
Hyderabad, Professor  
Jayashankar Telangana State  
Agricultural University,  
Telangana, India

#### Dr. Swetha Kodali

Assistant Professor, Department  
of Family Resource  
Management, College of  
Community Science, Hyderabad,  
Professor Jayashankar  
Telangana State Agricultural  
University, Telangana, India

#### SL Kameswaris

Assistant Professor, Department  
of Extension Education and  
Communication Management,  
Hyderabad, Professor  
Jayashankar Telangana State  
Agricultural University,  
Telangana, India

#### Corresponding Author:

##### Varnam Radhika

MSc, Research Student,  
Department of Resource  
Management and Consumer  
Sciences, College of Community  
Science, Hyderabad, Professor  
Jayashankar Telangana State  
Agricultural University,  
Telangana, India

## Aged/Elder's ability to perform ADL/IADL activities and satisfaction levels under existing indoor lighting

Varnam Radhika, Dr. D Ratna Kumari, Dr. Swetha Kodali and SL Kameswaris

### Abstract

The present study was supposed to detect the difficulties faced and satisfaction levels of lighting while performing ADL (Activities of Daily Living) / IADL (Instrumental Activities of Daily Living) activities under existing indoor lighting. Exploratory research design was used with a sample of 50 elderly people who lives in apartments selected through purposive random sampling method and collected data through a structured interview cum observation schedule. The study found that majority (33.14 mean score) of the male respondents felt somewhat difficult and least (1.66 mean score) felt very difficult while, 44.37 mean score of the female respondents felt not at all difficult and two mean score felt moderately difficult. Majority (33.7%) of the respondents were averagely satisfied with existing lighting while performing ADL activities which belongs to 56-60 years of age group. Least (one per cent) of the respondents were extremely dissatisfied which belonged to 76-80 years of age group. Majority (35%) of the male respondents were satisfied with existing lighting while performing ADL activities. Least (1.5%) of the respondents were extremely dis satisfied with existing lighting for ADL activities. Majority 19% of the respondent felt Average in the age group of 55-60 and least two per cent felt Dissatisfied in the age group of 66-70 while performing IADL activities.

**Keywords:** Difficulty levels, satisfaction levels, ADL (Activities of Daily Living), IADL (Instrumental Activities of Daily Living).

### Introduction

Light is a critical tool in human functioning. It allows human beings to see things and perform activities. Light entering the human eyes has an important non- visual biological effect on the human body as it influences human health, well-being and productivity at the work environment.

Light levels must be increased to counteract the loss of visual acuity that occurs throughout the aging process. While older adults are constantly encouraged to remain mobile and as active as possible, when there is insufficient light older individuals give up on independent activity even walking (Brawley, 2009) [3]. Sabia (2008) [10] mentioned that there is empirical evidence that older people find it more difficult to move in their households because of poor lighting.

The older people need more light to achieve the same visual input as young people (Boyce, 2014; Owsley, 2011; Schneck & Haegerstrom – Portnoy, 2003) [2, 9, 11] and 80 year-old needs four times the light level and 2.5 times the contrast required by a 20-year old (Bienick, Frei & Rousselet, 2013; Owsley 2011) [1, 9].

Keeping this in view, the present study focused on checking whether the existing lighting levels are able to meet the elderly lighting requirements specially in the apartments.

### Objectives of the study:

1. To study the Difficulty levels while performing ADL/IADL activities under existing indoor lighting with regards to gender
2. To study the satisfaction levels while performing ADL/IADL activities under existing indoor lighting with regards to age and gender

### Materials and Methods

Exploratory research design was followed in the present study. Sample size was 50 from (25 female and 25 male) aged between 56 to 80 years living in apartments selected through random purposive sampling. The data was collected through an interview cum observational schedule which was later tabulated, interpreted and analyzed through frequency, percentages,

scores and mean scores. Hyderabad and Secunderabad cities of Telangana state were the study areas.

**Results and Discussion**

**1. Difficulty levels while performing ADL/ IADL activities under existing indoor lighting with regards to gender**

The difficulty levels while performing ADL and IADL activities under existing lighting were discussed below the Table 1 the responses were mentioned under options like VD- Very difficult, MD- Moderately difficult, D- Difficult, SWD- Somewhat difficult and NAD- Not at all difficult weighs 1,2,3,4 and 5 points respectively. The points given by the respondents were multiplied by their weight ages.

Majority of the respondents felt that performing ADL activities under the existing lighting levels were not at all difficult like eating (85 points by both male and female), bathing (55 points by both female and male), dressing (75 points by male and 70 points by female) and toileting (55 points by both male and female).

Performing ADL activities under existing lighting were reported somewhat difficult which scored 20 by male and 32 by female for eating, scored 36 points by male and 32 by female for bathing, scored 32 points by male and 40 by female for dressing while toileting activity scored 36 points by male and 28 by female.

**Table 1:** Gender Distribution of the difficulty levels scores while performing ADL and IADL activities under existing indoor lighting N=50

	Gender	Male					Female					Total
	Activities	VD (1)	MD (2)	D (3)	SWD (4)	NAD (5)	VD (1)	MD (2)	D (3)	SWD (4)	NAD (5)	
ADL	Eating	2	-	3	20	85	-	-	-	32	85	50
	Bathing	2	2	9	36	50	-	-	18	32	55	50
	Dressing	1	2	-	32	75	-	-	3	40	70	50
	Toileting	2	2	6	36	55	-	2	18	28	55	50
IADL	FP	-	2	-	-	5	-	-	33	28	20	24
	MM	1	-	6	28	20	-	-	9	16	20	25
	Reading	2	2	9	52	25	-	2	12	52	25	47
	Shopping	-	4	6	28	10	-	2	-	16	25	23
Mean scores		1.66	3	6.5	33.14	8	-	2	15.5	30.5	44.37	39.87
Total (F)		10	7	13	58	65	-	3	31	61	71	319

\* VD - Very difficult \* MD – Moderately difficult \* D- Difficult \* SWD – Somewhat difficult \* NAD – Not at all difficult

Difficulty level scores while performing IADL activities under the existing lighting levels scored not at all difficult (20 points), somewhat difficult (28 points) and difficult (20 points) for food preparation activity which were only performed by female.

Managing medication difficulty levels scored not at all difficult with 20 points by both male and female, somewhat difficult with 28 points by male and 16 points by female.

Difficulty scores of reading activity scored not at all difficult with 25 points and somewhat difficult with 52 points by both male and female respondents.

The difficulty levels while performing shopping scored not at all difficult with 10 points by male and 25 points by female while, somewhat difficult with 28 points by male and 16 points by female.

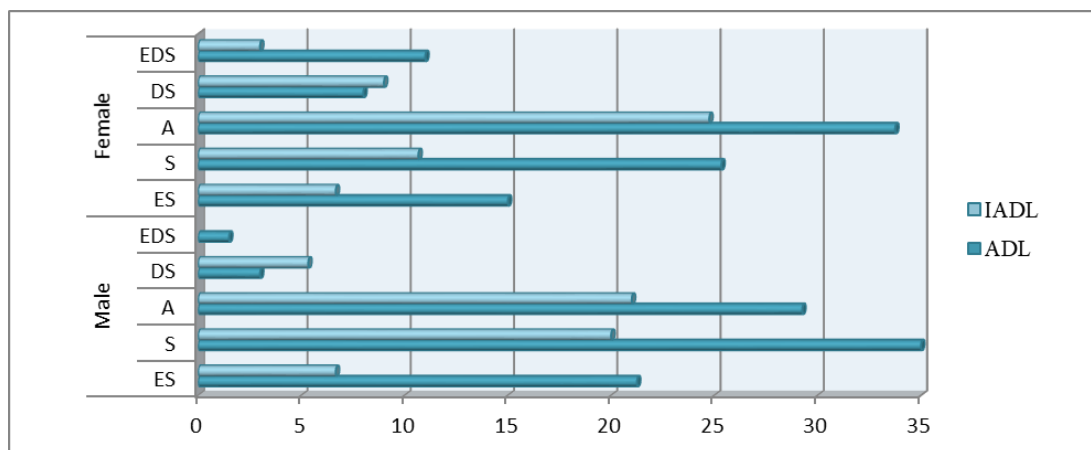
From the Table 1 it was clear that the difficulty levels of the female respondents' were more than the male respondents. This might be due to the household activities which were mostly done by female more than the male, for example: food

preparation. Eilertsen *et al.*, (2016) [5] reported that, irrespective of existing indoor lighting levels respondents did not felt any problems related with their abilities to perform ADLs and IADLs or carry out hobbies as the respondents were habituated to lighting levels of the rooms.

**2. Satisfaction levels while performing ADL/ IADL activities under existing indoor lighting with regards to age and gender**

The satisfaction levels of lighting among the respondents while performing ADL and IADL activities with regards to their age and gender were discussed below. The scores obtained were ES- Extremely satisfied, S- Satisfied, A- Average, DS- Dissatisfied and EDS- Extremely dissatisfied which weighs for 5,4,3,2 and 1 respectively.

**Satisfaction levels of lighting while performing ADL/ IADL activities with regards to Gender**



\* ES – Extremely satisfied \* S – Satisfied \* A – Average \* DS – Dissatisfied \* EDS – Extremely dissatisfied

**Fig 1:** Gender Distribution for the Satisfaction level scores while performing ADL and IADL activities under existing indoor lighting

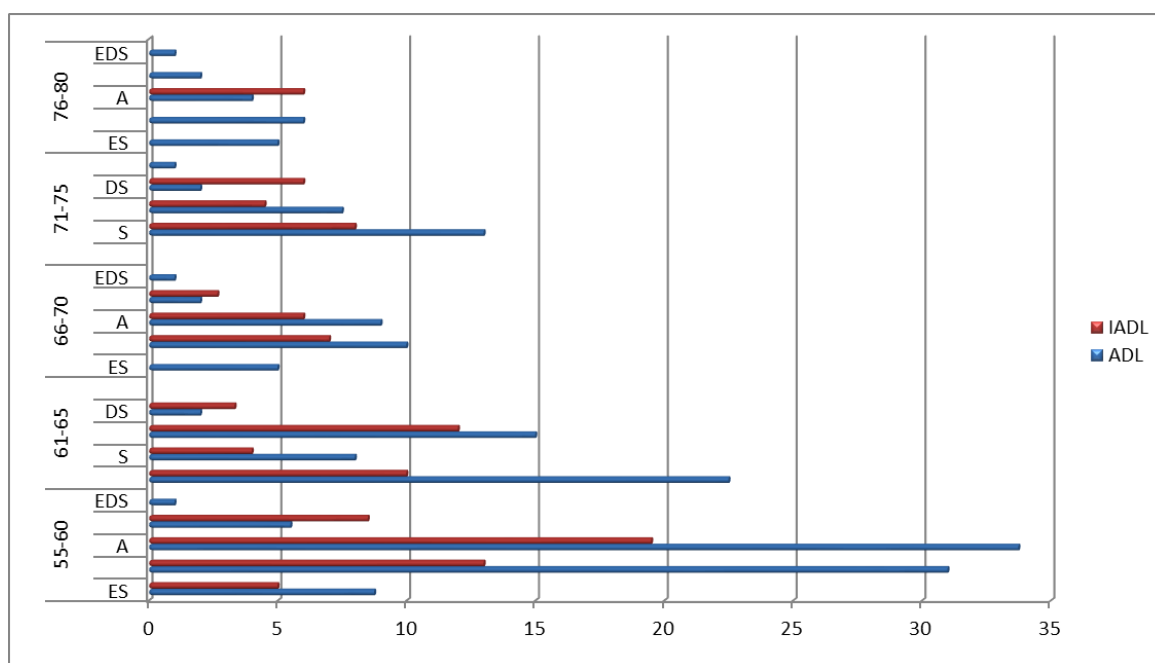
Figure 1 reveals the satisfaction levels of the respondents while performing ADL activities among male were satisfied (35%), averagely satisfied (about 30%), extremely satisfied (about 22%), however only three and about two per cent men were dissatisfied and extremely dissatisfied respectively. Similarly, female respondent's scores were extremely satisfied (15%), satisfied (26%), averagely satisfied (34%), dissatisfied (eight per cent) and extremely dissatisfied (11%). Satisfaction levels for the IADL activities among male were averagely satisfied (21%), satisfied (20%), extremely satisfied (about seven per cent), and dissatisfied (about six per cent). Female respondent's scores were extremely satisfied (about seven per cent), satisfied (about 11%), averagely satisfied (about 25%), dissatisfied (nine per cent) and extremely dissatisfied (three per cent).

From the figure 1 it can be concluded that, compared to the male respondents' female respondents were extremely dissatisfied especially while performing bathing and food preparation activities under existing indoor lighting.

Compared to female respondents' male respondents were extremely satisfied except food preparation activity as it was mainly done by females. Most of the respondents were satisfied while performing ADL activities compare to IADL activities because IADLs require more lighting to perform than ADLs. The reason for the dissatisfaction as reported by Duijnhoven, *et al.*, (2017) [4], that the absence of uncomfortably bright or dim lighting, a poor lighting distribution, reflections from light fixtures, and too bright light fixtures led to a poor satisfaction with lighting.

**Satisfaction levels of lighting while performing ADL/ IADL activities with regards to Age.**

Figure 2 reveals the results related to scores obtained by the respondents while performing the activities under the existing indoor lighting with regards to age. The scores obtained were ES- Extremely satisfied, S- Satisfied, A- Average, DS- Dissatisfied and EDS- Extremely dissatisfied which weighs for 5,4,3,2 and 1 respectively.



\* ES – Extremely satisfied \* S – Satisfied \* A – Averagely satisfied \* DS – Dissatisfied \* EDS – Extremely dissatisfied

**Fig 2:** Age Distribution of for the Satisfaction level scores while performing ADL and IADL activities under existing indoor lighting

Figure 2 shows the results related to scores obtained by the respondents while performing the activities under the existing indoor lighting with regards to age. The scores obtained were ES- Extremely satisfied, S-

Average scores of ADL activities achieved were 8.75 for extremely satisfied 31 for satisfied, 33.75 for average and 5.5 for dissatisfied in the age group of 55-60. Age group of 61-65 were scored 22.5, 8, 15 and 2 for extremely satisfied, satisfied, average and dissatisfied respectively. Scores in the age group of 66-70 was 5,10,9 and 2 for extremely satisfied, satisfied, average and dissatisfied respectively. The age group of 71-75 scores were satisfied (13), average (7.5) dissatisfied (2) and extremely dissatisfied (1). Scores of 76-80 years of age group were extremely satisfied (5), satisfied (6), average (4) and dissatisfied (2)

Average scores of IADL activities achieved were extremely satisfied 5, satisfied 13, average 19.5 and dissatisfied 8.5 in the age group of 55-60. Scores achieved in the age group of 61-65 were extremely satisfied 10, satisfied 4, average 12 and dissatisfied 3.33. In the age group of 66-70 scores were

satisfied 7, average 6 and dissatisfied 2.66. In the age group of 71-75 scores obtained were satisfied 8, average 4.5 and dissatisfied 6. Scores of 76-80 years of age group was only average 6.

From the Figure 2 it was clear that most of the respondents were extremely satisfied, satisfied and average in all age groups very few respondents were extremely dissatisfied amid the age group of 56-60 years. Generally as age increases satisfaction level of respondents upon the existing indoor lighting decreases due to reduction of eye sight this might be because the sample of the present study mostly belongs to 56-60 years of age group.

**Conclusion**

The present study concluded that majority of the respondents did not felt any difficulties with existing lighting levels while performing ADL activities only few of the respondents felt difficulties while performing IADL activities which require more vision. Compared to male respondents some female respondents felt very difficult (1.66 mean score) while

performing both ADL and IADL activities.

Compared to the male respondents' female respondents were extremely dissatisfied especially while performing bathing and food preparation activities under existing indoor lighting. Compared to female respondents' male respondents were extremely satisfied except food preparation activity as it was mainly done by females.

Most of the respondents were extremely satisfied, satisfied and average in all age groups very few respondents were extremely dissatisfied in the age group of 55-60 years.

Compared to ADL activities IADL activities require more lighting while execution, so respondents were more satisfied while performing ADLs than IADLs.

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