

**A STUDY ON CAREGIVER STRESS AND SOCIAL  
SUPPORT PERCEIVED AMONG INFORMAL  
CAREGIVERS OF ELDERLY PEOPLE**

*Dissertation submitted to*

**THE TAMIL NADU Dr. MGR MEDICAL UNIVERSITY**

*In partial fulfilment of the requirements for the degree of*

**M.D. BRANCH XV**

**COMMUNITY MEDICINE**



**THE TAMIL NADU Dr. MGR MEDICAL UNIVERSITY,  
CHENNAI, TAMIL NADU.**

**MAY – 2019**

## **CERTIFICATE OF THE GUIDE**

This is to certify that the dissertation titled “**A STUDY ON CAREGIVER STRESS AND SOCIAL SUPPORT PERCEIVED AMONG INFORMAL CAREGIVERS OF ELDERLY PEOPLE.**” is a bonafide work carried out by **Dr.ILAVARASAN.I**, Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai-3, under my supervision and guidance towards partial fulfilment of the requirements for the degree of M.D. Branch XV Community Medicine and is being submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

Signature of the Guide

**Dr. R. Arunmozhi MD.,Ph.D.,**

Associate Professor,

Institute of Community Medicine,

Madras Medical College,

Chennai – 600 003.

Place : Chennai- 600 003

Date :

## **CERTIFICATE**

This is to certify that the dissertation titled “**A STUDY ON CAREGIVER STRESS AND SOCIAL SUPPORT PERCEIVED AMONG INFORMAL CAREGIVERS OF ELDERLY PEOPLE**” is a bonafide work carried out by DR.ILAVARASAN.I, Post Graduate student in the Institute of Community Medicine, Madras Medical College, Chennai-3, under the guidance of Dr. R. ARUNMOZHI, M.D., Ph.D., towards partial fulfilment of the requirements for the degree of M.D. Branch XV Community Medicine and is being submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

**Dr. R. JAYANTHI,**  
**MD., FRCP (Glasg)**  
DEAN,  
Madras Medical College,  
Chennai- 600 003

**Dr. T.S. SELVA VINAYAGAM,**  
**M.D., D.P.H., D.N.B**  
Director, Institute of Community  
Medicine  
Madras Medical College,  
Chennai -600 003

## **DECLARATION**

I, solemnly declare that the dissertation titled “**A STUDY ON CAREGIVER STRESS AND SOCIAL SUPPORT PERCEIVED AMONG INFORMAL CAREGIVERS OF ELDERLY PEOPLE**”, was done by me under the guidance and supervision of **Dr. R. ARUNMOZHI, M.D., Ph.D.**, Associate Professor, Institute of Community Medicine, Madras Medical College, Chennai-3. The dissertation is submitted to The Tamil Nadu Dr. M.G.R. Medical University towards the partial fulfilment of the requirement for the award of M.D. degree (Branch XV) in Community Medicine.

Signature of the candidate

**(Dr.ILAVARASAN.I.)**

Place: Chennai.

Date:

## **ACKNOWLEDGEMENT**

I gratefully acknowledge and sincerely thank **Prof. Dr. R. JAYANTHI, MD., FRCP (Glasg), Dean, Madras Medical College, Chennai-3** for granting me permission to carry out this community based study.

I also thank **Dr. T.S. SELVAVINAYAGAM, M.D., D.P.H., D.N.B.,** Director, Institute of Community Medicine, Madras Medical College, for giving his valuable suggestions for the study.

I would like to extend my sincere and profound gratitude to **Dr. R. ARUNMOZHI M.D., Ph.D.,** Associate Professor, Professor, Institute of Community Medicine, Madras Medical College, Chennai-3 for having been the ever present guiding and driving force behind my study and without whom this study would not have taken its present shape.

I also thank **Dr. JOY PATRICIA PUSHPARANI, M.D.,** Professor, Institute of Community Medicine, Madras Medical College, for giving her valuable suggestions for the study.

I would like to thank **Dr. CHITRA, M.D.,** Associate Professor, Institute of Community Medicine, Madras Medical College, for her expert suggestions and encouragement during the course of this study.

I also thank **Dr. R. RAMASUBRAMANIAN, M.D.**, Assistant Professor, Institute of Community Medicine, Madras Medical College, for his guidance and support rendered.

I extend my sincere gratitude to **Dr. S. SUDHARSHINI, M.D.**, Assistant Professor, Institute of Community Medicine, Madras Medical College, who helped me immensely by extending her knowledge and experience during the course of this study.

I would like to thank **Dr. JAYA DEEPA**, Medical Officer of Padiyanallur Primary Health Centre for giving her help rendered for the study.

I also wish to thank my colleagues and my seniors for their valuable suggestions given throughout the study. I also thank my friends who helped me in data collection.

My grateful thanks to all the participants of the study who patiently answered all my queries, and gave unhesitant consent to be part of the study, without whom this work would not have been possible.

I deeply thank my parents and family members for their moral support and love they have for me. Above all, I thank God for his grace and blessings which helped me to complete this task successfully.

## **ABBREVIATIONS**

<b>ADL</b>	–	Activities of daily living
<b>BSSS</b>	–	Berlin social support scales
<b>CG</b>	–	Caregiver
<b>CR</b>	–	Care recipient
<b>CI</b>	–	Confidence interval
<b>CSS</b>	–	Caregiver stress scale
<b>DUSOCS</b>	–	Duke Social Support and Stress Scale
<b>KCSS</b>	–	Kingston Caregiver Stress Scale
<b>MSPSS</b>	–	Multidimensional scale of perceived social support
<b>NCD</b>	–	Non-communicable diseases
<b>OR</b>	–	Odds ratio
<b>SD</b>	–	Standard deviation
<b>ZBI</b>	–	Zarit Burden Interview

## TABLE OF CONTENTS

<b>SL. NO</b>	<b>CONTENTS</b>	<b>PAGE NO.</b>
<b>1.</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2.</b>	<b>OBJECTIVES</b>	<b>5</b>
<b>3.</b>	<b>REVIEW OF LITERATURE</b>	<b>6</b>
<b>4.</b>	<b>METHODOLOGY</b>	<b>37</b>
<b>5.</b>	<b>RESULTS AND ANALYSIS</b>	<b>47</b>
<b>6.</b>	<b>DISCUSSION</b>	<b>73</b>
<b>7.</b>	<b>SUMMARY</b>	<b>84</b>
<b>8.</b>	<b>CONCLUSION</b>	<b>86</b>
<b>9.</b>	<b>RECOMMENDATIONS</b>	<b>87</b>
<b>10.</b>	<b>LIMITATIONS</b>	<b>88</b>
<b>11.</b>	<b>BIBLIOGRAPHY</b>	
<b>12.</b>	<b>ANNEXURES</b> Annexure 1 Information sheet – English and Tamil Annexure 2 Informed consent – English and Tamil Annexure 3 Questionnaire Annexure 4 Ethics Committee approval letter Annexure 5 Plagiarism certificate Annexure 6 Key to master chart Annexure 7 Master chart	



## LIST OF TABLES

TABLE. NO	TITLE	PAGE NO
1	Size of reference population, cumulative total population and sample	40
2	Socio demographic details of caregivers and care recipients	48
3	Co – morbid conditions of caregivers and care recipients	50
4	Distribution of caregiver stress among study population	50
5	Association between caregiver’s gender and stress	51
6	Association between care recipient’s gender and stress	51
7	Association between the state of caregiver and care recipient falling under same or opposite gender and stress	52
8	Association between caregiver’s age and stress	52
9	Correlation between age of caregiver and stress	53
10	Association between care recipient’s age and stress	53
11	Correlation between age of care recipients and stress	56
12	Association between caregiver’s relationship with care recipient and stress	56
13	Association between caregiver’s educational status and stress	57
14	Association between care recipient’s educational status and stress	57
15	Association between caregiver’s occupational status and stress	59
16	Association between care recipient’s occupational status and stress	59
17	Correlation between family income and stress	60
18	Association between caregiver’s residential status and stress	60
19	Association between caregiver’s marital status and stress	61
20	Association between duration of caregiving and stress	61

21	Correlation between duration of caregiving and stress	62
22	Correlation between time spent in caregiving and stress	62
23	Association between co – morbid status of caregiver stress and stress	62
24	Correlation between co –morbid conditions of caregiver and stress	63
25	Association between co – morbid status of care recipient and stress	63
26	Correlation between co –morbid conditions of caregiver and stress	65
27	Care recipient’s dependency Status and caregiver stress	65
28	Correlation between activity of daily living (ADL) score of care recipient and stress	66
29	Association between family support perceived by caregiver and stress	66
30	Correlation between family support and stress	67
31	Association between friends support perceived by caregiver and stress.	67
32	Correlation between friends support and stress	67
33	Association between social support perceived by caregiver and stress.	69
34	Correlation between caregivers’ perceived social support and stress	69
35	Binomial logistic regression between factors influencing and caregiver stress	71

## LIST OF FIGURES

<b>FIGURE NO</b>	<b>TITLE</b>	<b>PAGE NO</b>
1	Modified stress appraisal model	17
2	Gender wise distribution of stress	54
3	Age- wise (caregiver) distribution of stress	54
4	Age- wise (care recipients) distribution of caregiver stress	55
5	Stress distribution based on caregiver' relationship with care recipient	55
6	Stress distribution based on caregiver's educational status	58
7	Stress distribution based on caregiver's co-morbid status	64
8	Stress distribution based on care recipient's dependency status	64
9	Stress distribution based on family support	68
10	Stress distribution based on friends support	68
11	Stress distribution based on perceived social support	70
12	Linear relationship b/w social support and caregiver stress	70

# ***Introduction***

# **1. INTRODUCTION**

## **1.1 Growing geriatric population**

Demographic trends have shown an increase in geriatric population throughout the world <sup>(1)</sup>. In India for the past few decades, Medical sciences and health care system have advanced a lot. Social conditions of various sectors of the community are also improving <sup>(2)</sup>. In recent years nation's fertility rate is on declining phase. As the result average life expectancy has prolonged and resulted in growing elderly population <sup>(1)</sup>.

In India, the percentage of elderly people to the total population is low when compared to developed countries. But the proportion of elderly people in the age structure of Indian population is increasing steadily. In 2010, eight per cent of the total population were above 60 years. It is estimated that by 2050, the percentage of elderly people is likely to increase up to 19%. On the other end the percentage of productive younger generation is declining. It can be sought as shift from demographic bonus to demographic burden. It is an unavoidable consequence of demographic transition and India has to encounter this problem sooner. This shift will bring about various threats to social, economic and health care policies and their implementation <sup>(2)</sup>.

## **1.2 Health needs of elderly people**

The increase in aged population will lay down further burden on the already overstretched welfare services especially that of health. Till date in India

the health needs of geriatric population are often neglected. On most of the occasions, this vulnerable group is not given the special care. Even on situations of provision of health related services, only the tertiary care is rendered. Unfortunately those tertiary care services were all facility based. Most of the elderly persons are not in a position to visit health facilities regularly. They need physical support from others for variety of reasons like picking up to hospital, assisting to seek health related services within or out of hospital, for rehabilitative services and the most importantly during follow up.

### **1.3 Formal and informal caregiving**

On growing older, aged persons will become dependent in all the aspects. When they become dependent for activities of daily living in particular, they should seek assistance from other persons. One who cares for an elderly individual may be his/her family member, relative, friend, neighbour or some other person who was paid for his/her service. A person who is paid for his/her caregiving is known as formal caregiver. As the name implies he/she is formally trained in caregiving tasks. On the other end a family member, relative or friend, unpaid for his/her service is known as family caregiver. A Family caregiver is not formally trained and so he/she is also called as informal caregiver.

In developing countries like India, the position of a family caregiver overshoots the position of formal caregiver. In spite of its professional trait, formal caregiving is still not at ease with the most of Indian families and it remains to be expensive. More over aged persons in India expect emotional

support rather than the financial support. It can be provided only by a family or informal caregiver.

#### **1.4. Evolving of caregiver stress**

Whether the enormous need for informal caregivers has been met or not is dubious. Growing geriatric population with a reciprocal decrease in availability of family care givers has laid down excess of stressors on existing caregivers.

In our sociocultural context, spouses, children and children – in – law are expected to play the role of caregiver for their elderly relative. It is considered to be their sole responsibility to look after the elderly care recipients. In such a scenario they hesitate to reveal their difficulties. More often they may even feel guilty for their perception. All together they may develop stress within themselves.

Caregiver stress or burden is experienced when life events, chronic life strains, individual self-concepts and coping mechanisms along with the presence or absence of social supports come together to create an environment that challenges the individual's capacity to adapt to role of family caregiver<sup>(3)</sup>.

Caregiver stress is highly influenced by numerous factors like gender, earning status, disease conditions and dependency status of care receiving elderly person. For multitude of reasons, caregivers have to rely upon their family members, friends and neighbours who constitute the major sources of social

support. But unfortunately there remains a wide gap in understanding between them and caregivers. Most of the time, caregivers may not be in the position of communicating properly their difficulties related to caregiving with the family and friends.

### **1.5. Justification**

It is obvious that family members and friends are hardly aware about the snags related to caregiving. Earning family members may have misconception that financial support alone will appease the situation. Other members and friends may believe that caregiving task is the sole responsibility of the concerned caregiver. Even if they come forward to render their support, potential areas in caregiving will remain to be hidden ones for them.

So the study is aimed primarily to identify those areas and factors associated with in the processing of caregiver stress. Support from family members and friends may be directed towards those influencing factors. Pertaining to that our study is intended to explore the influence of social support perceived by caregivers stress. Findings from the study will provide an overall picture of home care provisions experienced by elderly population as well as about the magnitude of caregiver stress among family caregivers in Indian families. The suggestions of our study may contribute in identifying community and family base solution for the family caregivers.



# ***Objectives***

## **2. OBJECTIVES**

1. To estimate the level of caregiver stress as perceived by informal caregivers of elderly people.
2. To identify and analyse the factors influencing caregiver stress.
3. To explore the influence of perceived social support on caregiver stress.

# ***Review of Literature***

### **3. REVIEW OF LITERATURE**

#### **3.1 Elderly people**

United Nations has accepted 60 plus years as the cut off age for elderly people<sup>(4)</sup>. By 2050, the world's ageing population is expected to reach 2 billion, grown exponentially from 900 million (2015). By 2050, 80% of all older people will be living in low- and middle-income countries. Elderly people can support their families, provided they should pose good health. But unfortunately most of the elderly people in India are poor in health and suffer from multitude of co-morbid conditions<sup>(5)</sup>. So in practice, at most of the occasions, rather than providing support to their family, elderly people have been transformed into mere care recipients. Caregivers either formal or informal have to care for them.

#### **3.2 Importance of caregiving**

Current health systems cannot solve these needs. They were designed primarily to deal with acute phases of illness rather than providing long-term care. Many policymakers seek to reduce burden in related to geriatric care by promoting informal caregiving. Even in countries with high public spending and low family responsibility such as Netherlands, focus is shifting towards more of social responsibility and informal care. Formal (professional) care and informal care are complementary, implying that an extensive formal support framework

provides an environment where both informal caregiving and formal caregiving function optimally <sup>(6)</sup>.

### **3.3 Formal caregiver**

Formal caregivers are mostly but not always professionals, paid for their service. They can also be volunteers working for a charity as well. Either paid professional or volunteer they are trained in elderly care. Formal caregivers can be available as part time or full time<sup>(7)</sup>. Strength of formal caregiving is that caregivers are formally trained in all the domains of elderly care. Weakness may be the lack of emotional component.

### **3.4 Informal caregiver**

Informal caregivers will have a significant personal relationship with the elderly care recipients. These individuals may be primary or secondary caregivers and live with, or separately from the person receiving care<sup>(8)</sup>. Informal caregivers will have an emotional touch with the elderly which forms the core element of informal caregiving. On the other end they remain helpless or may mismanage when the elderly care recipient develops any acute or chronic illness.

An informal caregiver performs a wide range of activities. It includes assistance in maintenance of personal hygiene, taking the care recipient to hospital, takeover of financial burden, providing emotional support, etc. Usually they are not paid for their service and in Indian society most of the time it is considered as their sole responsibility and duty <sup>(9)</sup>.

In India due to demographic transition the proportion of elderly people is expected to increase from 8 percentage (2010) to 19 percentage by 2050. Various factors which include unchecked mobilisation of rural people for job opportunities, Rapid urbanisation and increasing trend of nuclear family either individually or cumulatively left behind the elderly people deprived of care and support <sup>(10)</sup>.

Industrialisation and globalisation have brought numerous changes in family arrangements throughout the world including India. In Indian context, it is well revealed that family has remained to be stable even during the period of great recession (2007–09). We can conclude that family and support from its members will be the ultimate saviour for elderly people. Family is the principle source of care for elderly people and most of the time it remains to be the major mode of security for them. Family members are expected to be the primary caregivers to them <sup>(10)</sup>.

Traditionally care for elderly people will be available in parental home and responsibility falls on the shoulder of son(s). Daughter-in-law should provide all sort of care. On the other hand, once daughter got married, she is expected to give care to her parents – in - law only. However if a son is not available she may take the role of caregiver <sup>(10)</sup>.

Quality and quantity of informal caregiving depend upon various factors. They are socio economic status, structure of the family, quality of relationship

prevailing among family members and individual demand of each member. Caregiving tasks vary widely. They may range from a minimal level of assistance to complete full time care. Each level in this range has its own impact on caregiver's perception <sup>(11)</sup>.

It is well agreed that family members have the maximal responsibility to take care of elderly members. But the fact should also be accepted that level of dedication and commitment may vary among individual members, communities and geographical regions. Care giving by a family member is not a constant unchangeable task. Various factors influence the caregiving. Supportive services like counselling services, sharing in assistance to activities of daily living and provision for home care are some of those factors influencing family/ informal caregiving<sup>(11)</sup>.

Number of available family members is decreasing due to various reasons. Fall in fertility rates, striking urbanisation and migration, increasing trend of nuclear families, increasing number of working women and need of most of the family members to earn altogether contributed to a reduction in number of available family caregivers (1).

### **3.5 Informal caregiving- changing concepts**

- **Increasing life expectancy** - ageing population is growing. Ultimately their children who would be the potential care providers are likely to be middle aged or sometimes crossing the age of 50-60. It is not uncommon for them to have one or more co morbid conditions <sup>(11)</sup>.

- **Caregiving for two dependent groups on both the extremes** - caregivers from the current generation differ grossly from their older generation. Most of them got settled after graduation in a quiet productive job only after their early twenties. After getting married in late twenties or early thirties they were engaged in delayed procreation either voluntarily or involuntarily. All together they formed to be the sandwich generation of caregivers who are obligated to take care of their elder family members and own children simultaneously<sup>(11)</sup>.
- **Changing scenario** - due to financial needs and need of job opportunities an individual either as a single or with his spouse and children has to migrate from his native place. On most of those occasions elderly family members are left behind. Previously women were mostly found to be homemakers. They were engaged in providing care for the elderly. But at current scenario, in most of the households they are also employed in various jobs. Reasons may vary. Gender equality, women empowerment and needs of a family requiring all its productive members to earn money are some of those reasons. In such a situation there will be reduced availability of female caregivers. Otherwise female caregivers are compelled to go to work as well as to look after their family including elderly members<sup>(11)</sup>.



Changes mentioned above have changed the concept of informal care giving. Usually informal caregiving is synonymous with family caregiving. But the declining availability of family members as caregivers has resulted in increasing demand to look for somebody else other than family members <sup>(11)</sup>.

No longer the concept of informal caregiving can be restricted to family caregivers alone but also embraces others. Vigilance should be maintained while defining informal caregivers because of possibility of intrusion of elements of formal caregiving. Caregiver need not be a family member but should not be paid or formally trained in any of the aspects of caregiving.

### **3.6 Challenges faced by caregivers**

High level of stress is reported by the caregivers who are taking care of their spouses. Family Caregiving does not stop with assisting in activities of daily living. It also engulfs the medical or nursing tasks. Family care givers should also perform certain activities like a formal care giver.

- **Time factor** – caregivers have to spend some time in caregiving. They have to sacrifice certain things like vacations, entertainment etc. They may feel difficult in fitting into the work schedule.
- **Emotional and physical stress** – Caregivers often complaint that their health condition is deteriorating. They report that they experience emotional stress especially if the care recipient has certain co-morbid conditions like Alzheimer’s disease or dementia. They also feel being

exhausted when they got involved in physical tasks like lifting and mobilising the dependent care recipient.

- **Financial strain** – When family caregivers are not working and have to be dependent financially on other family members, they are more prone to feel insecure.
- **Sleep deprivation** - Lack of sleep or disturbed sleep is one of the inevitable problems faced by family caregivers. Though it appears to be an altered physiological process on due course it will have an impact on their psychological status.
- **Being afraid to ask for help**- Most of the caregivers hesitate to ask for help from others. They feel that asking for such help may sound as the sign of weakness. At the same time without any external help he may not be able to provide a full-fledged care for the elderly recipient. Finally they feel guilt that they are not paying the duty properly.
- **Isolation and depression** - Most often family caregivers have to spend ample of time in caregiving. They are no longer able to maintain outside contacts and relationship with their neighbours. They are not able to deliver their community participation and deport their social interaction. They feel that they are isolated from the society and family. Later on they develop depression <sup>(12)</sup>.

Ideally caregiving should be the source of satisfaction. But in many occasions it is found to be the source of stress and emotional strain. If the informal caregivers feel that the care provided by them is not sufficient, they may develop stress and on long term it will be perceived as burden <sup>(13)</sup>.

### **3.7 Caregiver stress**

It results from unrelieved caring for an older person or an adult with or without chronic illness <sup>(14)</sup>. A person will experience the caregiver stress when his individual capacity to adapt the role of family caregiver is challenged by an environment which is formed by his life events, life time strains he faced; his own self – concepts and coping mechanisms in the presence or absence of social support <sup>(3)</sup>.

Caregiver stress results as a physical and psychological consequence of imbalance between care recipient's care needs and care being provided. Various factors like social role, physical and emotional conditions of both caregiver and care recipient, availability of financial sources and formal assistance all together contribute to this imbalance resulting in caregiver stress. Caregiver stress on long run become a chronic condition and perceived as caregiver burden <sup>(3)</sup>.

Caregiver stress affects adversely the health and wellbeing of both caregiver and care recipient either directly or indirectly. Caregiver may develop various physical and mental issues like anxiety, depression and non-communicable diseases <sup>(3)</sup>.

### 3.8 Stress – appraisal model

Experts have proposed various stress – appraisal models to describe the stress perceived by caregivers. Model proposed by Yates and colleagues describes about five elements that process into caregiver stress. All those elements form a causal chain of events resulting in stress.

Those elements are;

- **Primary stressors** – needs of the care recipient based upon their health status and associated co – morbid conditions like cognitive impairment behavioural problems, etc. and functional disabilities.
- **Primary appraisal** – reflects the way how a caregiver responds to meet the needs of care recipient. It is expressed as duration of care.
- **Mediators** – balance the effects of stressors and caregivers' well-being. They include availability of formal care, emotional support and quality of care giving.
- **Secondary appraisal** – the final experience of a caregiver as the results of primary stressors, primary appraisal and mediators. It is expressed as caregiver stress or burden.
- **Outcome** – caregiver's well-being <sup>(15)</sup>.

Above model has its own drawback. It failed to identify the fact that similar stressors are perceived by caregivers in dissimilar ways. In order to address those issues Ellen Verbakel and colleagues modified the model (16).

### **3.9 Modified stress appraisal model**

As per the modified model, mediators mentioned, instead of being as one among the elements of causal chain of events in stress process, act as “moderators” that strengthen or weaken the relationship between other elements.

- **Moderators** – formal and informal support are the major mediators. These moderators act as buffers and drag down the negative consequences of informal caregiving.
  - **Formal support** – the degree of availability of professional home care (i. e, formal support) which can reduce the caregiver stress or burden. Here formal support will be the mere supplementary support.
  - **Informal Support (DIRECT)** – Direct delivery of emotional support to care recipients by other family members. They may or may not be the secondary caregivers. This will bring down the stress level in primary caregiver.
  - **Informal support (INDIRECT)** – Over all social support perceived by the caregiver. It is not related to caregiving tasks and not directly delivered to care recipients. Perhaps it is directly delivered to the caregiver. It is believed that the perceived social support will bring down the stress level.

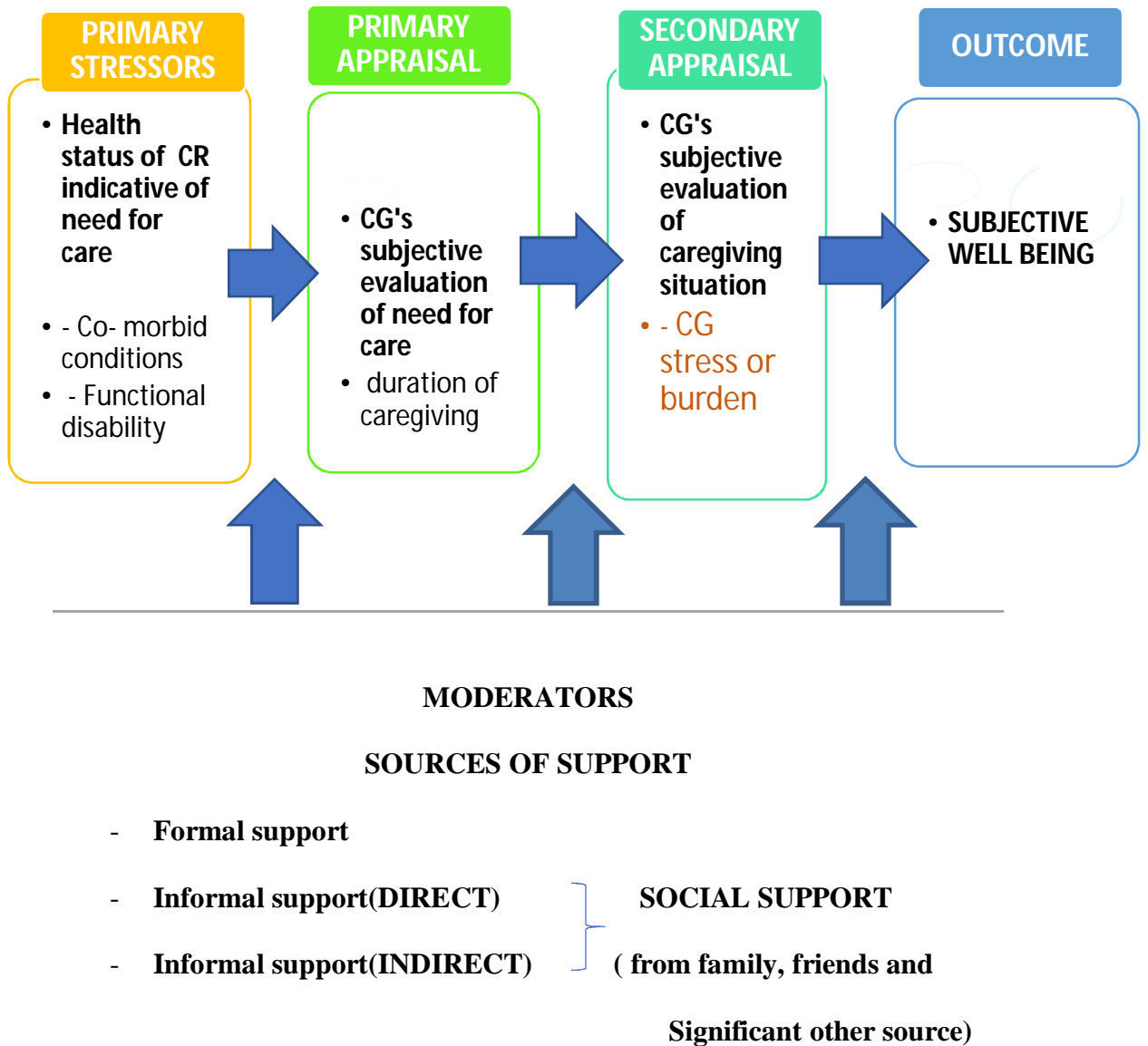
It includes the major domains of family support, friends' support and support from significant other source.

Modified appraisal model has two positive aspects.

First, it is possible to investigate the moderating effects of perceived social support which enables us to identify the vulnerable areas at any stage of stress process and to decide about various interventions. Appropriate interventions at the appropriate stage will be effective in relieving the adverse effects of informal caregiving. Secondly, the alleviating potentials of the social support can be precisely assessed <sup>(16)</sup>.

Casado and colleagues in their study emphasized caregiver - gender, relationship with care recipient, education and duration of caregiving as background variables. They also considered family, friends and social networks as contextual factors <sup>(17)</sup>.

\*Background and context - caregiver gender, relation to the care recipient, education, time spent in caregiving and family and friend social network.



**Fig. 1 Modified stress appraisal model**

**Primary stressors** represent the strenuousness of tasks. For example a care for a care recipient with Alzheimer's disease demands more than the care required for a person without the disease <sup>(18)</sup>. If a caregiving tasks are more strenuous then the caregiver will experience more **stress (secondary appraisal)**.

On one end Caregiving tasks compete with time and energy required for other routine essential duties like career, family & child care and other household activities. On the other end, time spent in providing care (**primary appraisal**) will compete with enjoyable activities such as hobbies and outings with friends <sup>(19)</sup>. Both the situations will increase the likelihood of perceiving more **stress (Secondary appraisal)**.

Though the caregiver is subjected to similar primary stressors and primary appraisal, the response differs among individuals. This is because of different levels of support like **formal support and social support (moderators)**. Ultimately the resultant stress also differs among individuals. It directly results in varying degree of **well – being (outcome)**.

### **3.10 Primary stressors**

Care recipient's needs depend upon his/her health status and co – morbid conditions like Cognitive impairment, behavioural problems, etc. and functional disabilities. Caregiver has to perform more strenuous tasks if care recipient's health status deteriorates or prevailing co – morbid conditions got worsen. It can be concluded that co-morbid conditions and functional disabilities act as primary



stressors. Complete elicitation of history will provide information about co-morbid conditions.

Activities of daily living (ADLs) are often mentioned as physical ADLs or basic ADLs. They include the basic skills needed to maintain basic physical needs. They cover the following areas – grooming (personal hygiene), dressing, toileting (continence), ambulating and eating. ADL performance is dependent upon cognitive (e.g., reasoning, planning), motor (e.g., balance, dexterity), and perceptual (including sensory) abilities. There is functional decline of ADLs as cognition worsens <sup>(20)</sup>.

Various tools are in practice to assess ADL performance

- ✓ **Katz index**, one of the commonly used tools was originally formulated to assess the dependent status of those who were in rehabilitation <sup>(20)</sup>.
- ✓ **BARTHEL INDEX**, an ordinal scale, is the most commonly used tool to measure performance in ADL. The scale was introduced in 1965. Each item is rated on this scale with the score assigned to each level of performance. If the score is high the individual can live independent. Time - factor and status of need for physical assistance are considered in assigning value to each item <sup>(21)</sup>.

### **3.11 Primary appraisal**

Primary appraisal represents the caregiver's subjective evaluation of needs of care recipient <sup>(16)</sup>. It is influenced by duration of caregiving. Time may be spent

for caregiving in two ways. One may be number of hours spent in a day and another one, the number of years spent in caregiving.

### **3.12 Moderators**

Moderators include formal support, direct informal support and social support (indirect). Our study is aimed at estimating the level of social support perceived by the caregivers.

#### **3.12.1 Social support**

Social support can be defined as the availability of a person or group of people on whom an individual can rely and in turn that person or group may care about, value and love the concerned individual.

Perceived support refers to assessment of level of availability of support from family members, friends, neighbours or significant other source when it is needed. It refers to the degree of appraisal of its adequacy or quantity and quality of such support<sup>(22)</sup>. Various scales are used to measure the social support perceived by the caregiver.

- ✓ **Berlin Social Support Scales (BSSS, Schwarzer & Schulz, 2000)** comprises of 6 subscales. Those subscales are perceived support, actually provided support, received support, need for support, support seeking and protective buffering. BSSS measure both cognitive and behavioural aspects of social support<sup>(23)</sup>.

- ✓ **Duke Social Support and Stress Scale (DUSOCS)** - is a self-administered tool to assess the level of social support and stress perceived by a caregiver. It was developed by the department of Community and Family Medicine, Duke University Medical Centre, Durham, NC, USA (1989). It can be used in community settings <sup>(24, 25)</sup>.
  
- ✓ **Multidimensional Scale of Perceived Social Support (MSPSS)** - Researchers have documented that adequacy of social support is directly related to the severity of physical and psychological symptoms and it acts a buffer between stressors and symptoms.  
  
Zimet and colleagues (1988) developed the new scale that had number of qualities which made it a useful addition to social support scales already in use <sup>(26)</sup>.

### **3.13 Secondary appraisal**

As already discussed secondary appraisal was the final experience of a caregiver as the results of primary stressors, primary appraisal and influence of moderators. It is expressed as caregiver stress or burden.

In related to the study which was aimed to measure the level of stress, influence of primary stressors, moderators, background and context variables (gender of caregiver, relationship with the recipient, education, time factor, family and social network) on caregiver stress were also intended to be assessed.

Various scales are used

- ✓ Kingston Caregiver Stress Scale is designed for informal caregivers and not institutional care staff. KCSS consists of ten questions that are grouped under 3 categories: care giving, family, and financial issues <sup>(27)</sup>.
- ✓ Zarit Burden Interview (ZBI) was developed to measure subjective burden among caregivers. Originally it was developed as 29-item scale. At present the 22 item version is more commonly used <sup>(28)</sup>.
- ✓ Caregiver stress scale used in the present study was a locally validated scale modified from the Caregiver Strain Index <sup>(1,29)</sup>.

In a study conducted by K K Mehta in Singapore, 28% of the caregivers were experiencing the high level of stress <sup>(1)</sup>. The study had highlighted some of the key correlates of stress, namely gender of the caregiver, relationship with care recipient, co – morbid conditions and dependency status of care recipient <sup>(1)</sup>.

The symptoms of caregiver stress and the caregivers' perceptions of the caregiving experience had provided insights into the psychosocial world of the family caregiver. The findings from the study had reflected the situations of family caregivers in a country in Southeast Asia where there had been limited number of similar research, thus providing a rich source of information <sup>(1)</sup>.

Regarding the weakness of the study, first the sample was drawn from a multiservice agency that served families from low-income groups. So the results could not be applied to all income groups. Second, the sample size of 61 was relatively small. It might lead to the dispute that how far the results could be generalised. Most of the caregivers were not well versed in English and so translation errors could not be ruled out.

In spite of relatively small sample size and purposive sampling method, the study findings had revealed various factors that affect caregiving. It is felt that this sample size was sufficient enough to highlight some fundamental issues of informal caregiving. If the study was conducted in intention to explore the phenomenon of informal caregiving and its problems, it is felt that to some extent, the study had attained its aim.

In a study conducted by V Gleviczky in Finland, about 38% of the caregivers were chronically stressed <sup>(3)</sup>. Stress was significantly correlated to various factors like lack of perceived social support, a high level of dependency of the care recipient, time spent in care giving, cognitive and behavioural impairment of the care recipient <sup>(3)</sup>.

In the study, participants were contacted only through post. So the influence by the interviewer and hesitation to express the real thoughts in the background of guilty feeling were handled better in the study. Various tools used in the study such as BI Index, ZBI and MSPSS were found to be more reliable and added value to the study.

On the other end, Study participants were selected purposively from the 291 informal caregivers registered to receive support from the municipality of Kokkola for informal care. Response rate was found to be less than 50% and only around 95 to 97 caregivers responded. Whether the results could be generalised or not is under interrogation.

In a cross sectional study conducted in Egypt by R A A Salama et al., female caregivers formed the major portion of participants (86.8%), which indicates that cultural norms in Egypt are still influencing caregiver stress. Majority (63.9%) of the respondents were chronically stressed. Social support, functional disabilities of care recipients and duration of caregiving were some of the key variables associated with the stress process.

The study revealed the real situation prevailing in most of the developing countries. Most of the important variables had been identified and analysed. But sampling was done purposefully. In spite of the fact that the study results are in similar pattern with other studies, those results could not be generalised. Influence of co-morbid conditions of both care recipients and care givers on stress level was not analysed. Though there was a mention about level of social support in the study, it was not precisely explained <sup>(30)</sup>.

In an Indian study conducted by Prasad SD and colleagues with the aim of assessing the stress among the caregivers of the elderly in rural families, it was found to be associated with gender, age of caregiver and family income <sup>(31)</sup>. The

influence of dependency status on stress level was not estimated. In spite of the fact that nearly three fourth of the caregivers were from joint (22%) and extended (54%) families, more relevant influencing factor of availability of secondary caregivers was not discussed. Though there was mentioning about family support, it was not discussed elaborately <sup>(31)</sup>.

In a Malaysian study conducted by Ghazali SB and colleagues, on due course, nearly 21.7% of the caregivers had developed stress <sup>(31)</sup>. Employment status of caregivers, duration of caregiving and functional dependency were the key factors associated with the stress <sup>(32)</sup>.

In a study conducted in Brazil by Loureiro LSN, characteristics like retired elderly, spousal caregivers, and caregivers with less education were associated with stress outcome. On long run, nearly a quarter (23%) of respondents had been experiencing high level of stress <sup>(33)</sup>. Probability proportional to size sampling was done. But still size of sample was too low (52 participants) which would hinder the generalisation of study results <sup>(32)</sup>. In a Turkish study conducted by Evcil (k) E. D et al, 24.5% of the participants were highly stressed and it was found to be in line with findings of other studies <sup>(34)</sup>

### **3. 14. Gender**

In Singapore study, 28% of the informal/family caregivers experienced the high level of caregiver stress. Among participants, number of female caregivers was nearly twice the number (69%) of male caregivers. score). Female caregivers experienced high stress (30.9%) when compared with male caregivers (24.4%) <sup>(1)</sup>.

In Indian study, the role of gender was significant and women were found to be highly stressed (burden assessment scale (BAS) mean – 43.1; SD – 13.6). This might be probably because caring the elderly was actually shouldered by the female caregivers and was considered as their sole responsibility. Though the Study had shown that female caregivers were highly stressed, it failed to discriminate the influence of relationship of the female caregivers in respect to their care receiving elderly relatives <sup>(31)</sup>.

Similar results were revealed in Egyptian study, 71.6% of female caregivers experienced chronically a high level of caregiver stress. On the other end only 13% of male caregivers experienced the stress and this difference was found to be statistically significant ( $< 0.01$ ) (30). Contradicting to above studies, Finland study didn't find any association between the informal caregiver's gender and stress <sup>(3)</sup>.

In the study conducted by U Okoye and S Asa in Nigeria, male caregivers (14.9%) were highly stressed than their female counterparts (14.3%) but this difference was found to be not statistically significant ( $p < 0.39$ ). A lot of reasons have been adduced in the study <sup>(35)</sup>.

Firstly, females were the most common carers to get engaged in caregiving. In fact, it was considered as a part of socialization process. This being the case, they might feel that it was the part of their natural duty and so they had not felt any stress in caring for an elderly relative. Secondly, females might feel less stress



because they had been prepared to play the role of caregiver during childrearing years and so had gained some sort of experience <sup>(35)</sup>.

But this finding seemed to be contradicting with the findings of most of the literatures conducted in many underdeveloped and developing countries. In these countries, Female caregivers were engaged to look after the care recipients along with household duties. These female caregivers were not formally employed and they had to be dependent upon the head of the family, in all the aspects.

In contrast to male caregivers who spent less time in caregiving because of their engagement in outdoor activities, these female caregivers had to spend most of the time along with their care recipients. During that elongated span of caregiving, they had to assist in various physical tasks of caregiving which includes activities of daily living and instrumental activities of daily living. So it was obvious that female caregivers were more prone to be stressed, in which this study failed to reveal the fact <sup>(35)</sup>.

### **3.15 Age of caregiver**

In Singapore study, 52% of caregivers were younger than 60 years. The correlation between age and stress was extremely low ( $r = 0.03$ ). One possible reason could be that caregivers younger caregivers (age less than age 60) experienced the same amount of stress as the older caregivers but the causes might vary. The average CSS score for both the age groups was 3.3. Hence, age was not an important significant variable in determining the level of caregiver stress <sup>(1)</sup>.

In Finland study, the age of the caregiver was negatively correlated to the caregiver stress and it was found to be significant ( $r = - 0.292$ ,  $p < 0.05$ ). It means that stress decreases as the age of the informal caregiver increases. But the finding contradicts with most of the other studies. Explanation given was that usually informal caregivers of older age have been engaging in care giving activities for many years. During these years they would have developed new coping skills, increased their knowledge about care giving activities. However, this explanation could not be accepted by the fact that the same study had showed that stress increased with the number of years of care giving. <sup>(3)</sup>

In Nigerian study, as the age of caregiver increases, their level of stress decreases. Caregivers at the age group of less than 20 years are highly stressed (50%). There exists a significant relationship between caregiver's age and level of caregiver stress ( $p = 0.001$ ).

- Younger caregivers were engaged with a lot more in their lives and so caregiving might not give them the needed time to take part in activities that would interest them.
- In addition, older caregivers might have had more experience in the caregiving role and so they might be in a position to cope better than the younger ones <sup>(35)</sup>.

But the finding seemed to be inappropriate that as age got increased, multitude of factors would potentiate the stress level in caregivers. Reduction in

financial support would be the major concern. Co – morbid conditions being added upon in both care recipients and themselves would influence definitely their stress level. Gradual loss of family and social support would worsen the situation. As old age set in, in addition to looking after the care recipient, the poor caregiver by him/herself would become dependent. All these factors were well explored in various studies.

### **3.16 Age of care recipient**

In Nigerian study, Caregivers were more highly stressed by care recipients in the age group of 70-89 (18%). There was a significant relationship between care receiver's age and caregivers' level of stress ( $p=0.011$ )<sup>(35)</sup>. Turkish study revealed similar results where the caregivers of elderly adults 70 years and older were 5.614 times at risk of developing stress (95% CI [1.617-19.492;  $p = 0.007$ )]<sup>(34)</sup>.

### **3.17 caregiver's relationship with care recipient**

In Singapore study, among spousal caregivers, husbands experienced less stress (mean – 1.95) compared with wives (3.14). Responsibility, commitment and resource availability were important factors in understanding the impact of caregiving on caregivers. The impact of caregiving task on physical health was found to be more critical in the aging spouse <sup>(1)</sup>.

In Brazilian study, among family caregivers, spouses had the highest stress (mean – 34.77,  $p = 0.046$ ). Many of these caregivers were also suffering from the aging process and subjected to to dysfunctions resulting from senescence <sup>(33)</sup>.

In Egyptian study, among caregivers in terms of relationship with care recipients, wives were chronically stressed (73%), followed by daughters (72%) and it was found to be statistically significant ( $<0.01$ ). Daughter-in-laws (42.5%) and grandchildren (41.2%) experienced chronically the high level of stress caregiver than the children (18.2% to 18.4%) ( $p=0.014$ )<sup>(30)</sup>.

### **3.18 Educational status**

In Egyptian study, 63% of Caregivers who had completed secondary school, experienced a high level of stress on comparing with others. In Brazilian study, there was higher burden (34.77%) among caregivers with lower educational levels ( $P < 0.05$ )<sup>(30)</sup>.

In Nigerian study, Caregivers who had high level of education experienced the lower level of stress (8.3%) than those who had medium (25.7%) and low level (33.3%) of education. This relationship was found to be significant ( $p<0.001$ ). The study also revealed that caregivers of care receivers who had high education (16.7%) and no education (15%) were more likely to develop high level of stress (16.7% and 15% respectively) when compared with caregivers of those care recipients with average level of education (11.8%). This relationship was also found to be statistically significant ( $p < 0.022$ )<sup>(35)</sup>.

In Brazilian study, though the caregivers who had done schooling up to 8 years are more stressed (stress score  $> 30$ ) than the caregivers who had done

schooling above 8 years (stress score < 28), the difference was not found to be significant (0.825) <sup>(33)</sup>.

### **3.19 Occupational status**

Very few literatures tried to associate occupational status of caregiver with the stress. Most of the studies associated household income rather than the occupational status with caregiver stress.

In Malaysian study, caregivers who were employed were three times at higher odds of having high stress than those unemployed (OR = 3.04, 95% CI: 1.05, 8.84). the finding in respect to employed status of the caregiver was contradicting to the general perceptions. Study suggested that Malaysian caregivers had found it more stressful to have a formal job other than caregiving. The study had substantiated its finding by stating that caregivers were in oscillation between accomplishing the sociocultural expectations of caregiving and the need to go to job in order to earn a living <sup>(32)</sup>.

Unemployed Caregivers were mostly housewives, experienced less stress because they might have more time to care. But this finding was found to be inconsistent. Being employed in a productive job and a status of being independent a caregiver would be less stressed. Likewise unemployed housewives experiencing low stress was also a matter of dubious. Because in addition to various house hold activities they were found to be looking after the elderly care recipients. Ultimately they would be more stressed.

In Brazilian study, retired caregivers were more stressed (stress score > 30) than others. This difference was found to be statistically significant ( $p = 0.001$ )<sup>(33)</sup>.

### **3.20 Income status**

In Egyptian study, though mild level of stress was found chronically among high income group, statistically there was no such correlation between monthly household income and stress ( $r = 0.187$ ,  $p = 0.11$ ). In a study conducted in India, an inverse but weak relationship is seen between family income and the caregiver stress ( $r = -.18$ ,  $p = 0.001$ )<sup>(30)</sup>.

Surprisingly Nigerian study revealed that caregivers in the high-income category were highly stressed (15.6%) than those in the low-income category. The level of income was significantly related to the level of stress ( $p=0.043$ )<sup>(35)</sup>.

It was generally reported that caregivers with high income were more likely to experience less stress than those with low income. However, findings from the study revealed that caregivers in the high income category were highly stressed than those in the low income category. The level of income was significantly related to the level of stress ( $p=0.043$ ). The results were justified as follows –

In Nigeria, a caregiver with high income would be expected to provide certain level of care than a person with low income. Therefore, in the compulsion to provide this expected level of care, stress may sight in the caregiver with high

income. People did not expect much from the caregiver with lower income and so their stress level is low.

But this finding was found to be hardly acceptable. The family and social scenario in most of the underdeveloped and developing countries seemed to be similar as in Nigeria. Various literatures had revealed that high income was inversely related to the stress level. High income would definitely diminish the level of dependency of a caregiver in all the aspects including finance. Ability to meet the demands of the care recipient including medical needs would definitely lessen the stress level in caregiver.

### **3.21 Duration of caregiving**

In Finland study, there was a positive significant correlation between the number of care giving years and stress ( $r = 0.216$ ,  $p = 0.045$ ). The stress increased with the number of care giving years. But there was no such correlation between time spent in caregiving per day and stress ( $r = 0.005$ ,  $p = 0.963$ )<sup>(3)</sup>.

Similar results were revealed in Egyptian study in which there was a positive significant correlation between the number of care giving years and the stress ( $r = 0.87$ ,  $p < 0.00$ ). But there was no such correlation between time spent in caregiving per day and stress ( $r = 0.168$ ,  $p = 0.051$ )<sup>(30)</sup>.

In Indian study, the duration of stay is strongly correlated with the stress ( $r = 0.3$ ,  $p < 0.001$ ). In Malaysian study, Caregivers who spent more than 14 hours per day in caregiving experienced approximately five times more likely to be

stressed than those who spent less than 14 hours (14 – 24 hours vs <14 hours per day caregiving, OR = 4.65, 95% CI: 1.60, 13.48) <sup>(30)</sup>.

### **3.22 Co – morbid conditions of care recipients**

In Singapore study Caregivers who were looking after the care recipients suffering from dementia (mean score – 5) or Parkinson’s disease (mean score – 6) expressed high level of stress than others <sup>(1)</sup>.

In Finland study, Informal caregivers caring for care receivers with cognitive impairment and/or somatic symptoms were chronically stressed (mean score - 41.38). This relation was found to be statistically significant ( $p = 0.028$ , ANOVA test) <sup>(3)</sup>.

### **3.23 Dependency status**

In Singapore study, 24% of caregivers experienced high stress on looking after severely to totally dependent elderly people. Elderly persons’ ADL score was inversely proportional to caregivers’ stress. The lower the ADL score (with low score indicating greater level of dependence), the more the stress experienced by caregivers ( $r = -0.275^*$ ,  $p < 0.05$ ). Caregivers expected more help from the family. Approximately 14% of caregivers expressed their desire to get more support from the family members <sup>(1)</sup>.

In Finland study, the dependency status of the care recipient in activities of daily living was found to be correlated negatively with the level of stress and it was found to be significant ( $r = -0.259$ ,  $p < 0.05$ ). The study found a significant



negative association between the dependency status of the care recipient and the caregiver stress. These results were consistent with most of the findings in the literature <sup>(3)</sup>.

In Egyptian study, there was a positive correlation between functional impairment and chronic stress ( $r=0.314$ ,  $p < 0.001$ ). As the level of the recipient's physical disabilities increased, the greater the caregiver's reported to be chronically stressed. caregivers who cared for severely dependent elderly people experienced the higher level of stress (77.4%) than the caregivers of partially dependent and independent elderly people and the difference was found to be significant ( $< 0.01$ ). In Malaysian study, dependent elderly care recipients attributed to almost eight times higher odds of caregivers' high stress than the independent care recipients (OR = 7.61, 95% CI: 2.33, 24.88) <sup>(30)</sup>.

### **3.24 Social support**

In Finland study, Social support perceived by the caregiver was found to be correlated negatively with stress and it was found to be significant ( $r = -0.417$ ,  $p < 0.01$ ) <sup>(3)</sup>. Thus the study had found that the lack of perceived social support was highly associated to caregiver stress and confirmed the importance of social support for caregivers.

In Brazilian study, in spite of availability of large number of people were living with an elder person and more possibilities for support of family members it was identified that higher mean stress among caregivers who lived in multigenerational arrangements. This result might be related to the fact that a

greater number of people in the house could generate more demands for the family caregiver. In addition to taking care of the impaired elder, the caregiver was responsible for other activities related to the family. A larger number of people living together, need not necessarily to be translated into greater support for elders and their caregivers <sup>(33)</sup>.

In Malaysian study, though caregivers receiving support in the form of availability of secondary care givers were less stressed (stress level - 20.4%) than the caregivers without secondary caregivers (stress level - 24.5%), the difference was not found to be statistically significant ( $p = 0.543$ ) <sup>(32)</sup>.

In Egyptian study, informal social support (Hierarchical regression,  $B = -0.083$ ,  $p < 0.01$ ) was significantly associated with the degree of stress experienced. In particular, as the number of persons who provided aid to the caregivers increased, the degree of stress decreased ( $r = 0.255$ ,  $p < 0.001$ ) <sup>(30)</sup>.

# ***Methodology***

## **4. METHODOLOGY**

**4.1 Study design :** Community based cross sectional study

**4.2 Study place –** Area covered under Padiyanallur primary health centre

**4.3 Study population**

Informal caregivers of elderly people (age 60 and above) were selected as study population. After explaining about the purpose of study and obtaining informed consent, eligible caregivers were interviewed.

**4.3.1 Inclusion criteria for caregiver**

Any person either relative or non – relative to an elderly care recipient, spending time for at least eight hours along with the care recipient for a minimum period of three months, not formally trained and unpaid for his/ her services.

**4.4 Study duration**

Study was conducted during the period of April 2017 to December 2017.

## 4.5 SAMPLING

### 4.5.1 Sample size

Sample size of the study population was calculated based on the study titled “study of the burden of informal caregivers of elderly in Kokkola” by Vincent Gleviczky. With a 95% confidence interval, prevalence (P) of 38% and 20% of relative precision (i.e.7.6%), using the formula mentioned below sample size was calculated as:

$$N = Z_{(1-\alpha/2)}^2 pq/d^2$$

Where,

$$P = 38\%$$

$$q = 100 - p$$

$$= 100 - 38$$

$$= 62 \%$$

$$Z_{(1-\alpha/2)} = 1.96$$

$$d = 7.6$$

$$N = \{1.96*1.96*38*62\} / (7.6*7.6)$$

$$= 156$$

Expecting a 10% non- response rate, the calculated sample size will be

$$= 156 + 16$$

$$= 172$$

$$= 180 \text{ (rounded value).}$$

## **4.5.2 SAMPLING METHOD**

Sampling was done by MULTISTAGE SAMPLING METHOD

### **STAGE – 1**

Thiruvallur was selected among the 32 districts by SIMPLE RANDOM SAMPLING METHOD.

### **STAGE – 2**

There are 14 blocks in the district of Thiruvallur. All of them were enrolled and numbered up to 14. Sholavaram was selected among the 14 blocks by SIMPLE RANDOM SAMPLING METHOD.

### **STAGE – 3**

There are 5 Primary health centres in Sholavaram block. They are Alamathy, Arani, Budur, Padianallur and Panchetti. All of them are additional primary health centres except Budur, which is a Main primary health centre. All the centres were enrolled and numbered up to 5. Padianallur was selected among the 5 primary health centres by SIMPLE RANDOM SAMPLING METHOD.

### **STAGE – 4**

There are 4 subcentres in the Padianallur PHC area. They are Padianallur – 1, Padianallur – 2, Padianallur – 3 and Siriniyam. Sample population (size = 180) were selected from all the four sub centres. Number of Samples from each sub centre was decided by PROBOBILITY PROPORTIONAL TO SIZE SAMPLING METHOD.

**Table. 1 Size of reference population, cumulative total population and sample**

<b>Sub centres</b>	<b>Reference population</b>	<b>Cumulative total</b>	<b>Range</b>	<b>Sample size</b>
Padiyanallur I	11587	11587	1 - 11587	<b>49</b>
Padiyanallur II	12173	23760	11588 - 23760	<b>53</b>
Padiyanallur III	9890	33650	23761 - 33650	<b>43</b>
Siriniyam	9053	42703	33651 - 42703	<b>35</b>
				<b>180</b>

With the aid of computer generated table of random numbers a draw was made in such a way that the selected random number should not exceed **42703 (cumulative total population)**. Likewise **180 random numbers** were selected and enlisted. Then a sub centre was selected corresponding to each random number. For example, if the random number was 32143, Padiyanallur III would be selected as the number fell within the range of 23761 – 33650 (table -1). On attempting such a mode of selection, Padianallur – 1 was selected for **49 times**. So it was concluded that **49 participants** should be selected from Padianallur – 1 sub centre and the selection was done accordingly. Likewise other sub centres - Padianallur -2, Padianallur – 3 and Siriniyam were selected for **53, 43** and **35 times** and the same number of participants were selected from each sub centre respectively. Totally sample size of 180 was arrived as calculated earlier.

In each sub centre, a street was randomly selected. Based on door numbers assigned to houses in that particular street, starting from the first house, every alternate house was visited. On availability of an eligible caregiver with elderly

care recipient, he or she was interviewed. If not the next eligible household was approached. If number of participants assigned for that particular sub centre was not reached within the selected street, another street was selected randomly and data collection continued.

The details of the study were explained to them in local language and their willingness to participate in the study was confirmed. Consent was obtained. Following study tool was administered.

#### **4.6 STUDY TOOL**

Study tool has 3 parts : A pretested validated, semi-structured questionnaire, Caregiver Stress Scale (CSS), Multidimensional Scale for Perceived Social Support(MSPSS ).

##### **4.6.1. A pretested validated, semi-structured questionnaire with following sections –**

- a) Socio - demographic details of both caregiver and care recipients
- b) Details of caregiving
- c) Co – morbid conditions of both caregiver and care recipient
- d) Care recipients' Activities of daily living by using the **Barthel index**

It scales from 0 to 100. It demarcates precisely between severe and total dependency as well as mild dependency and independency. It can be widely used in various settings which include rehabilitative centres, nursing homes and also in community.



Barthel index has been shown to have fair reliability. Shah reported alpha internal consistency coefficients of 0.87 to 0.92 for the original scale. Roy et al. estimated an inter-rater correlation of 0.99 and with patient self-report as 0.88. Sherwood et al. found high Cronbach's reliability's (ranging from .95 to .96) in his work. Validity of the scale ranges between 0.73 and 0.77<sup>(21)</sup>.

Ten variables in the scale are - presence or absence of bowel incontinence, presence or absence of urinary incontinence, Help needed with grooming, Help needed with toilet use, Help needed with feeding, Help needed with transfers (e.g. from chair to bed), Help needed with walking, Help needed with dressing, Help needed with climbing stairs, Help needed with bathing.

A care recipient is said to be totally dependent when his/her score ranges between 0 and 20. If the score ranges between 21 and 60, the care seeker will be considered to be severely dependent. Care receiving elderly people will be treated as moderately dependent when he/she scores between 61 and 90. If the score lies between 91 and 99, the care recipient will be slightly dependent. The care recipient will be totally independent if his/her score is 100<sup>(21)</sup>.

**4.6.2. Caregiver Stress Scale** - consisted of ten items regarding caregiver stress (where a response of yes = 1, No = 0). A respondent could get a maximum score of 10. The total stress score for each respondent was calculated by adding the scores of all ten items. A respondent who got a score of 5 and above was considered to experience high level of stress. The overall scale had a high degree

of internal consistency (Cronbach's  $\alpha = 0.82$ ). This questionnaire was a locally validated scale, modified from the Caregiver Strain Index in accordance with the socio-cultural conditions prevailing in developing Southeast Asian countries like Singapore, India etc.<sup>(1, 29)</sup>.

#### **4.6.3. Multidimensional Scale for Perceived Social Support (MSPSS ).-**

The MPSS was developed by Zimet (1988).

First of all, the scale specifically met the subjective assessment of adequacy of social support. Other scales focussed mainly on the objective aspects of social support.

Secondly the scale was designed in such a way to assess the perceptions of social support adequacy from major domains of family, friends and significant other (special person).

Thirdly, the scale was found to be psychometrically sound, with good reliability, factorial validity and adequate construct validity.

Finally the scale was self – explanatory, simple to use and time saving tool. It was found to be an ideal instrument to use when there was time limitation, and/or number of measures to be administered at the same time.

Initially the scale was framed with 24 items. Each item was rated on a 5 – point Likert scale which ranged from strongly disagree(1) to strongly agree(5). Results of various pilot studies led to various changes and to the revised current

version. The current MSPSS includes 12 items. . These 12 Items which aimed to measure directly the social support could be divided into groups in relation to the sources of support – family, friends and significant other source. Each group consisted of four items. In order to increase response variability and minimise ceiling effect, 7 – point Likert scale which ranges from very strongly disagree<sup>(1)</sup> to very strongly agree<sup>(7)</sup> was implemented.

Cronbach’s coefficient alpha, a measure of internal reliability of the total scale is 0.88. Scoring would be calculated by adding all 12 items and then dividing the total score by 12. Any participant who got a score 3 and above will be considered as having adequate support <sup>(26)</sup>.

## **4.7 DATA COLLECTION**

The study was carried out after obtaining clearance from the Institutional Ethics Committee of Madras Medical College, Chennai.

## **4.8 DATA ENTRY AND ANALYSIS**

### **4.8.1 Data entry**

The data collected from the questionnaires were entered in Microsoft Excel 2010 version and the master chart was framed. The data entered were double checked for any errors. The data from the master chart were exported to Statistical Package for Software Solutions (SPSS) version 16 for statistical analysis.

#### **4.8.2 Data Analysis**

Continuous variables were presented in the form of descriptive statistics (mean and standard deviation) and categorical variables in the form of frequency distributions and percentages. Associations between categorical variables are tested using Chi square tests. Spearman correlation analysis was done to examine the relationship between the continuous variables. Multivariate analysis with binary logistic regression was performed to elucidate the predictors of the dependent categorical variable.

#### **4.8.3 Data presentation**

The distribution of categorical data was represented by tables and bar charts.

### **4.9 OPERATIONAL DEFINITIONS**

#### **4.9.1 Family/informal care giver**

Any relative, partner, friend or neighbour who has a significant personal relationship with and provides a broad range of assistance for an older person or an adult with or without a chronic or disabling condition<sup>(36)</sup>.

#### **4.9.2 Caregiver stress**

Caregiver stress can be defined as a condition of exhaustion, anger, rage or guilt that results from unrelieved caring for an older person or an adult with or without chronic illness<sup>(14,37)</sup>.

### **4.9.3 Social support**

Social support can be defined as the availability of a person or group of people on whom an individual can rely and in turn that person or group may care about, value and love the concerned individual.

Perceived support refers to assessment of level of availability of support from a special person, family members, friends and neighbours when it is needed. It refers to the degree of appraisal of its adequacy or quantity and quality of such support <sup>(22)</sup>.

# ***Results & analysis***

## **5. RESULTS AND ANALYSIS**

### **PLAN OF ANALYSIS**

- 5.1. Socio-demographic characteristics & Co-morbid status of Care giver and Care recipient
- 5.2. Level of Caregiver stress assessed using Caregiver Stress Scale
- 5.3. Assessment of factors influencing Caregiver stress:
  - 5.3.1. Socio-demographic characteristics of Caregiver and Care recipient
  - 5.3.2. Co-morbid status of Caregiver and Care recipient
  - 5.3.3. Dependency status of Care recipient
- 5.4. Social support perceived by Caregivers & its Influence on Caregiver stress.
- 5.5. Binomial Logistic Regression to analyse the factors influencing Caregiver Stress.

### 5.1.1. Socio-demographic characteristics of caregivers and care recipient

Among hundred and eighty (180) caregivers, 142 (79%) participants were female. Mean age of caregivers was 42.3 years. Care recipients were distributed equally in terms of gender. Caregivers spent an average of 16 hours in caregiving.

**Table.2 Socio demographic details of caregivers and care recipients**

SOCIO DEMOGRAPHIC CHARACTERISTICS	CARE GIVER (N = 180)	CARE RECIPIENT (N = 180)
	Mean ± SD	Mean ± SD
AGE (years)	42.3 ± 14.6	66.6 ± 7.04
Time spent in caregiving	16 hours ± 43 minutes	
	By Male Caregivers - 10 hrs 33 min ± 3 hrs 42 min By Female Caregivers – 17 hrs 30 min ± 6 hrs 36min	

	Frequency (percentage)	Frequency (Percentage)
<b>GENDER</b>		
Male	38 (21%)	90(50%)
Female	142(79%)	90(50%)

<b>EDUCATIONAL STATUS</b>		
Middle schooling	50(27.8%)	65(36%)
High/higher secondary schooling	65(36%)	31(17.2%)
Graduate	17(9.4%)	2(1.1%)
Not formally educated	48(26.7%)	82(45.6%)
<b>OCCUPATIONAL STATUS</b>		
Full time	48(26.7%)	18(10%)
Part time	33(18.3%)	39(21.7%)
Retired	----	7(3.9%)



Not working	99(55%)	116(64.4%)
<b>RELIGION</b>		
Hindus	166 (92.2%)	
Christian	6 (3.3%)	
Muslim	8 (4.4%)	
<b>RESIDENTIAL STATUS</b>		
Within same house	158(87.8%)	
Walk able distance	18(10%)	
Little far away	4(2.2%)	
<b>MARITAL STATUS</b>		
Married	143(79.4%)	
Unmarried	12(6.7%)	
Separated	12(6.7%)	
Widow(er)	13(7.2%)	
<b>RELATIONSHIP WITH CARE RECIPIENT</b>		
Husband	4(2.2%)	
Wife	50(27.8%)	
Daughter	38(21.1%)	
Daughter – in- law	50(27.8%)	
Son	30(16.7%)	
Others	8(4.4%)	

### 5.1.2. CO – MORBID CONDITIONS

**Table.3 Co – morbid conditions of caregivers and care recipients**

Sl. no	Co – morbid conditions	Caregiver(n)	Care recipient(n)
1	Diabetes mellitus	22	45
2	Hypertension	24	51
3	CVA	3	11
4	Joint problems	55	101
5	Depression	22	60
6	Memory	7	49
7	Behavioural problems	41	105
8.	Sleep disturbances	30	56
9.	Visual problems	7	29
10.	Hearing problems	1	10
11	Others	13	20

### 5.2. DISTRIBUTION OF CAREGIVER STRESS

**Table. 4 Distribution of caregiver stress**

Mean +/- Standard deviation	3.98 +/- 2.6	
Median	4	
Level of stress among caregivers	Low stress 101 (56.1%)	High stress 79 (43.9%)

Among 180 caregivers, 79 of them were experiencing high level of caregiver stress. It was evident from the study that the prevalence of caregiver stress was

**Prevalence (CI) = 43.9% (36.6% – 51.2%)**

### **5.3.1. INFLUENCE OF SOCIODEMOGRAPHIC CHARACTERISTICS ON CAREGIVER STRESS**

#### **5.3.1.1. Gender of caregiver and stress**

**Table.5 Association between caregiver’s gender and stress**

Gender of caregiver	Low stress	High stress	total	Chi square value	p value
Male	27(71%)	11(29%)	38	4.367	<b>0.037*</b>
Female	74(52%)	68(48%)	142		

Almost half of the female caregivers were experiencing high stress (48%). But among male caregivers only 29% of them were experiencing high stress. This difference was found to be statistically significant (p=0.037) (table.5).

#### **5.3.1.2. Gender of care recipient and stress**

**Table.6 Association between care recipient’s gender and stress**

Gender of care recipient	Low stress	High stress	Total	Chi square value	p value
Male	47(53%)	43(47%)	90	1.105	.293
Female	54(60%)	36(40%)	90		

Though statistically not significant caregivers of male recipients seemed to experience higher level of stress than caregivers of female recipients (table.6)

### 5.3.1.3. Influence of gender on caregiver stress

**Table.7 Association between the state of caregiver and care recipient falling under same or opposite gender and stress**

Gender influence	Low stress	High stress	total	Chi square value	p value
Same gender	39(54.2%)	33(45.8%)	72	0.184	0.668
Opposite gender	62(57.4%)	46(42.6%)	108		

There is no statistically significant association between the state of caregiver and care recipient falling under same or opposite gender and stress (table.7).

### 5.3.1.4. Age of caregiver and stress

**Table.8 Association between caregiver's age and stress**

Age of caregivers	Low stress	High stress	Total	Chi square value	p value
Less than 40 years	60 (70.6%)	25 (29.4%)	85	14.136	<b>0.001*</b>
40 to less than 60 years	27 (45.8%)	32 (54.2%)	59		
60 years & above	14(38.9%)	22(61.1%)	36		

Caregivers in the age group of 60 years and above were experiencing high level of stress than other groups. This association was found to be statistically significant ( $p=0.001$ ) (table-8).

**Table.9 Correlation between age of caregiver and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Age of caregiver	0.199	Very weak uphill (positive)	<b>0.007</b>

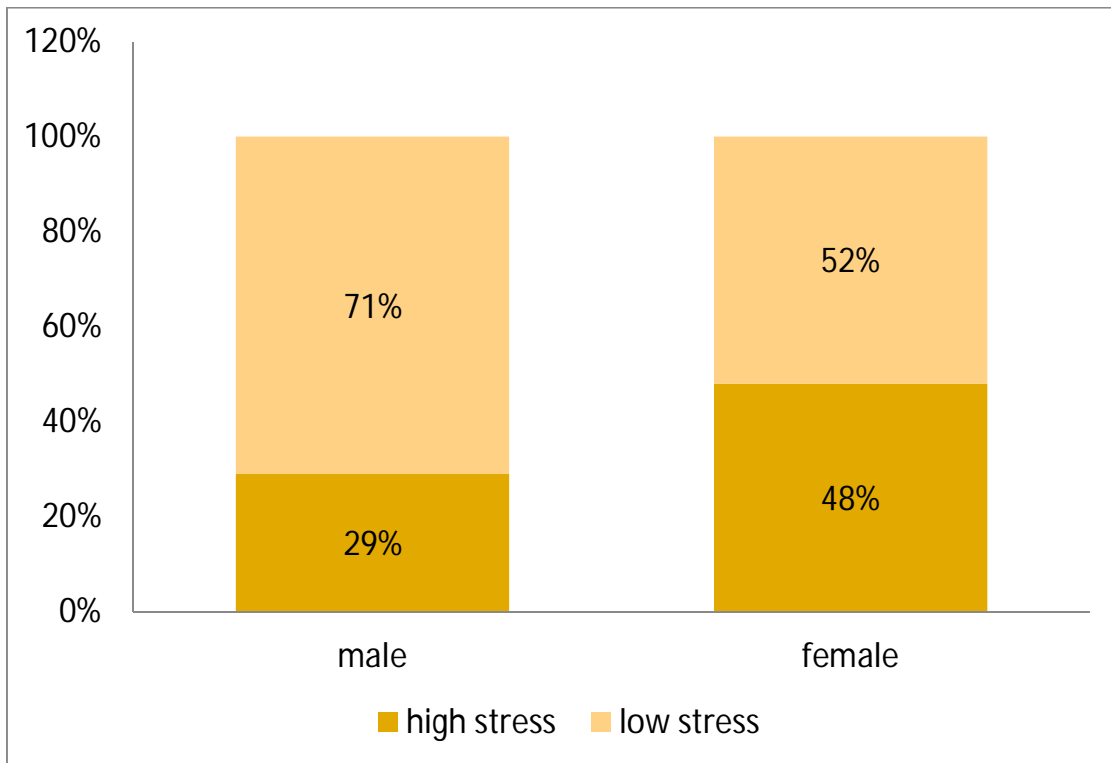
There was a very weak positive but statistically significant ( $p=0.007$ ) correlation between age of caregiver and stress. Increase in age of care givers was correlated with increase in stress (table.9).

### 5.3.1.5. Age of care recipient and stress

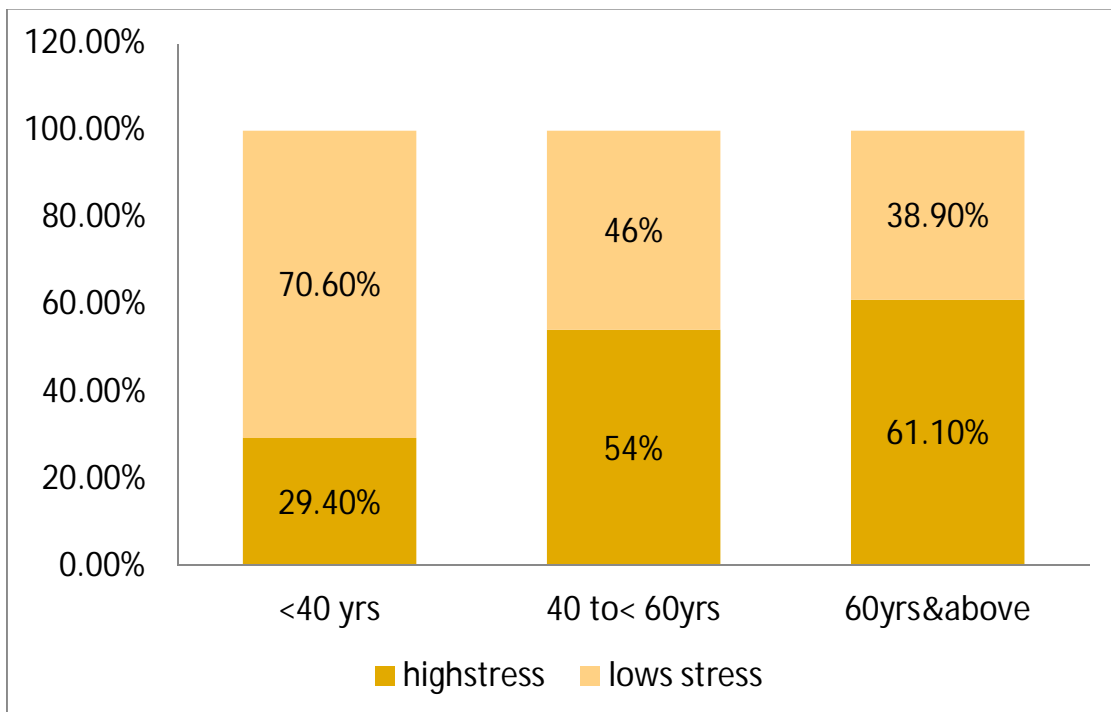
**Table.10 Association between care recipient's age and stress**

<b>Age of care recipient</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
Age less than 70 years	82(63.1%)	48(36.9%)	130	9.221	<b>0.002*</b>
Age 70 years and above	19(38%)	31(62%)	50		

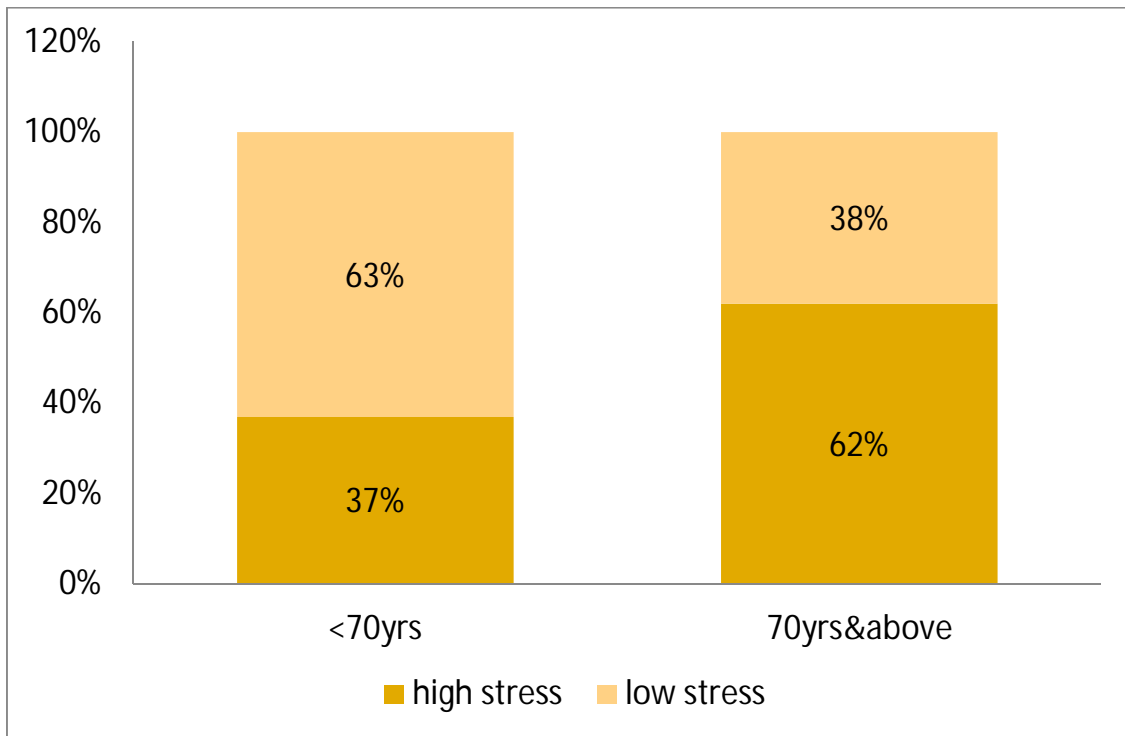
Care givers of care recipients aged 70 years and above were highly stressed (62%) than others. This association found to be statistically significant ( $p=0.002$ ) (table.10).



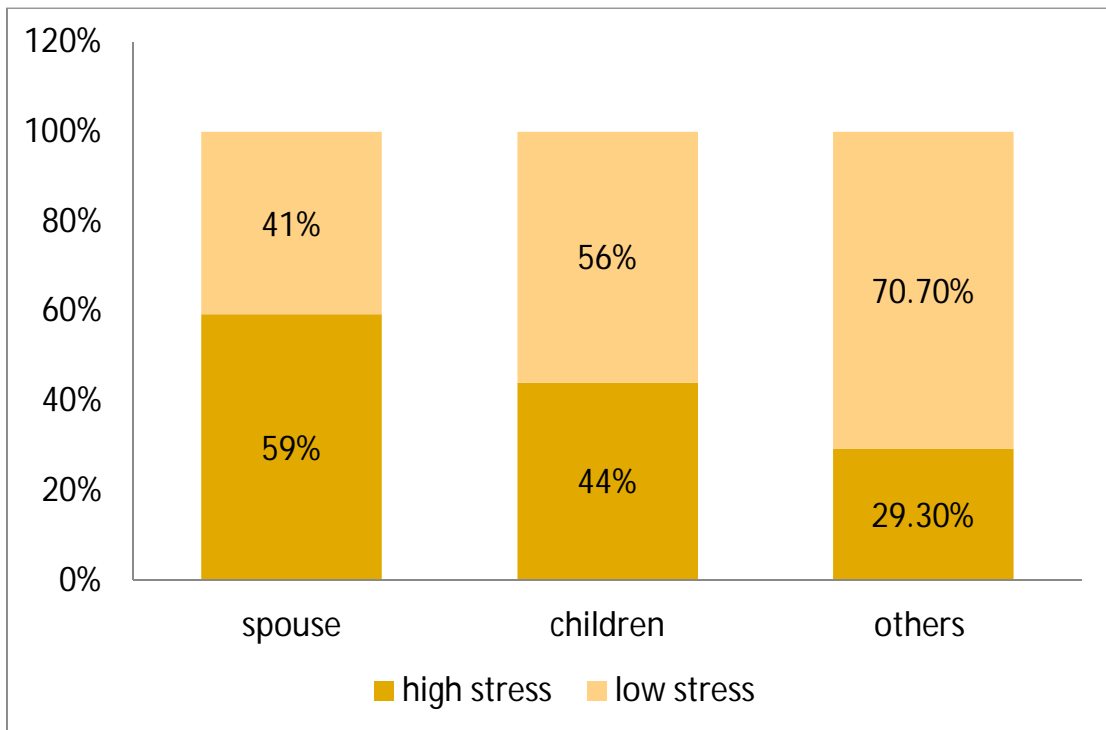
**Fig.2 Gender-wise distribution of stress**



**Fig.3 Age- wise (caregiver) distribution of stress**



**Fig.4 Age- wise (care recipients) distribution of caregiver stress**



**Fig.5 Stress distribution based on caregiver' relationship with care recipient**

**Table.11 Correlation between age of care recipient and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Age of care recipient	0.164	Very weak uphill (positive)	<b>0.028</b>

There was very weak positive but statistically significant ( $p = 0.028$ ) correlation between age of care recipient and stress. Increase in age of care recipient was correlated with increase in stress (table.11).

#### **5.3.1.6. Caregiver's relationship with the care recipient and stress**

**Table.12 Association between caregiver's relationship with Care recipient and stress**

<b>Caregiver's relationship with care recipient</b>	<b>Low stress</b>	<b>High stress</b>	<b>Total</b>	<b>Chi square value</b>	<b>p value</b>
Spouse	22(40.7%)	32(59.3%)	54	10.187	<b>0.006*</b>
Children	38(55.9%)	30(44.1%)	68		
Other relatives	41(70.7%)	17(29.3%)	58		

Spousal caregivers were highly stressed than other relatives (59.3%). This association was found to be significant ( $p=0.006$ ) (table.12).



### 5.3.1.7. Caregiver’s educational status and stress

**Table.13 Association between caregiver’s educational status and stress**

<b>Educational status of caregivers</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
Up to middle schooling	46(46.9%)	52(53.1%)	98	7.349	<b>0.007*</b>
High school & above	55(67.1%)	27(32.9%)	82		

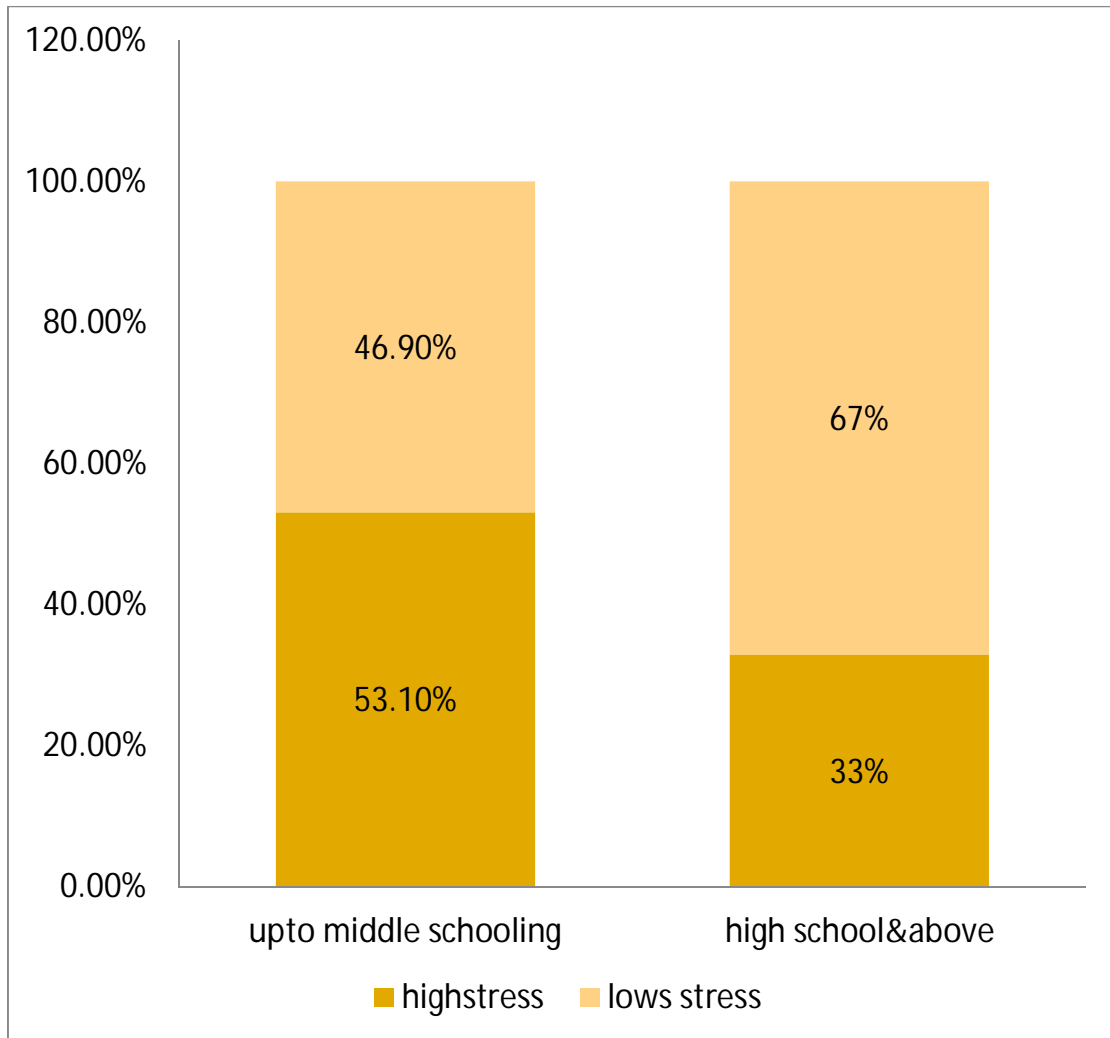
Caregivers who had completed middle schooling experienced high level of stress (53.1%) when compared to those who had completed high schooling. This association is found to be significant (p=0.007) (table.13).

### 5.3.1.8. Care recipient’s educational status and stress

**Table.14 Association between care recipient’s educational status and stress**

<b>Educational status of care recipients</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
Up to middle schooling	81(55.1%)	66(44.9%)	147	0.332	0.565
High school & above	20(60.6%)	13(39.4%)	33		

There was no statistically significant association between educational status of care recipients and caregiver stress (table.14).



**Fig.6 Stress distribution based on caregiver's educational status**

### 5.3.1.8. Caregiver’s occupational status and stress

**Table.15 Association between caregiver’s occupational status and stress**

Caregiver Occupational status	Low stress	High stress	Total		Chi square value	p value
Employed	47(58%)	34(42%)	81	M- 36(94.7%)	0.219	0.640
				F – 45(31.7%)		
Not employed	54(54.5%)	45(45.5%)	99	M – 2(5.3%)		
				F – 97(68.3%)		

There was no statistically significant association between occupational status of caregiver and caregiver stress (table.15).

### 5.3.1.10. Care recipient’s occupational status and stress

**Table.16 Association between care recipient’s occupational status and stress**

Care recipient’s Occupational status	Low stress	High stress	total	Chi square value	p value
Employed	36(63.2%)	21(36.8%)	57	1.682	0.195
Not employed	65(52.8%)	58(47.2%)	123		

There was no statistically significant association between occupational status of care recipients and caregiver stress (table.16).

### 5.3.1.11. Family income and stress

**Table.17 Correlation between family income and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Family income	- 0.223	Weak downhill (negative)	<b>0.003</b>

There was a weak negative but statistically significant (p=0.003) correlation between family income and stress. Increase in family income was correlated with decrease in stress (table.17).

### 5.3.1.12. Residential status of caregiver and caregiver stress

**Table.18 Association between caregiver's residential status and stress**

<b>Caregiver residential status</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
Living with care recipient in the same residence	85(53.8%)	73(46.2%)	158	2.810	0.094
Others	16(72.7%)	6(27.3%)	22		

There was no statistically significant association between residential status of caregiver and caregiver stress (table.18).

### 5.3.1.13. Marital status of caregiver and caregiver stress

**Table.19 Association between caregiver's marital status and stress**

<b>Caregiver marital status</b>	<b>Low stress</b>	<b>High stress</b>	<b>Total</b>	<b>Chi square value</b>	<b>p value</b>
Married living with spouse	82(57.3%)	61(42.7%)	143	4.462	0.114
unmarried	9(75%)	3(25%)	12		
Widow(er) / separated	10(40%)	15(60%)	25		

Though caregivers who were widow(er) or separated seemed to experience high level of stress than others, the association was found to be statistically not significant (table.19).

### 5.3.1.14. Duration of caregiving and caregiver stress

**Table.20 Association between duration of caregiving and stress**

<b>Duration of caregiving</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
Less than 5 years	61(59.2%)	42(40.8%)	103	0.947	0.33
5 years and above	40(51.9%)	37(48.1%)	77		

There was no statistically significant association between duration of caregiving and caregiver stress (table.20).

**Table.21 Correlation between duration of caregiving and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Duration of care giving	0.71	No relationship	0.346

There was no statistically significant correlation between duration of caregiving and stress (table.21).

**Table.22 Correlation between time spent in caregiving and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Time spent in caregiving (hours)	0.035	No relationship	0.645

There was no statistically significant correlation between time spent in caregiving and stress (table.22).

### **5.3.2. Influence of co – morbid status on caregiver stress**

#### **5.3.2.1. Co – morbid status of caregiver and stress**

**Table.23 Association between co – morbid status of Caregiver and stress**

<b>Caregiver co – morbid status</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
With no co – morbid conditions	64(73.6%)	23(26.4%)	87	20.826	<0.001*
With co – morbid conditions	37(39.8%)	56(60.2%)	93		

Caregivers with co – morbid conditions were experiencing high level of stress (60.2%) and the association was found to be statistically significant ( $p < 0.001$ ) (table.23).

**Table 24. Correlation between co – morbid conditions of caregiver and stress**

<b>Variable</b>	<b>Spearman’s Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Co – morbid conditions of caregiver	0.364	Weak uphill (positive)	<b>&lt;0.001</b>

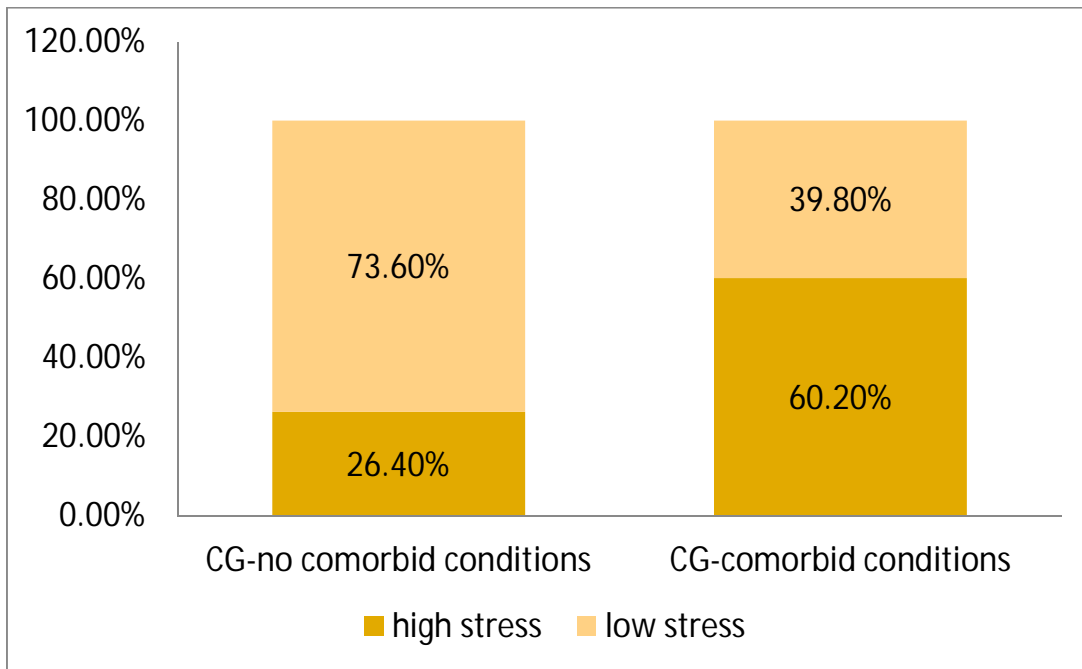
There was a weak positive but statistically significant ( $p < 0.001$ ) correlation between co – morbid conditions of caregiver and stress. Increase in co-morbid conditions of caregiver was correlated with increase in stress (table.24).

### 5.3.2.2. Co – morbid status of care recipient and stress

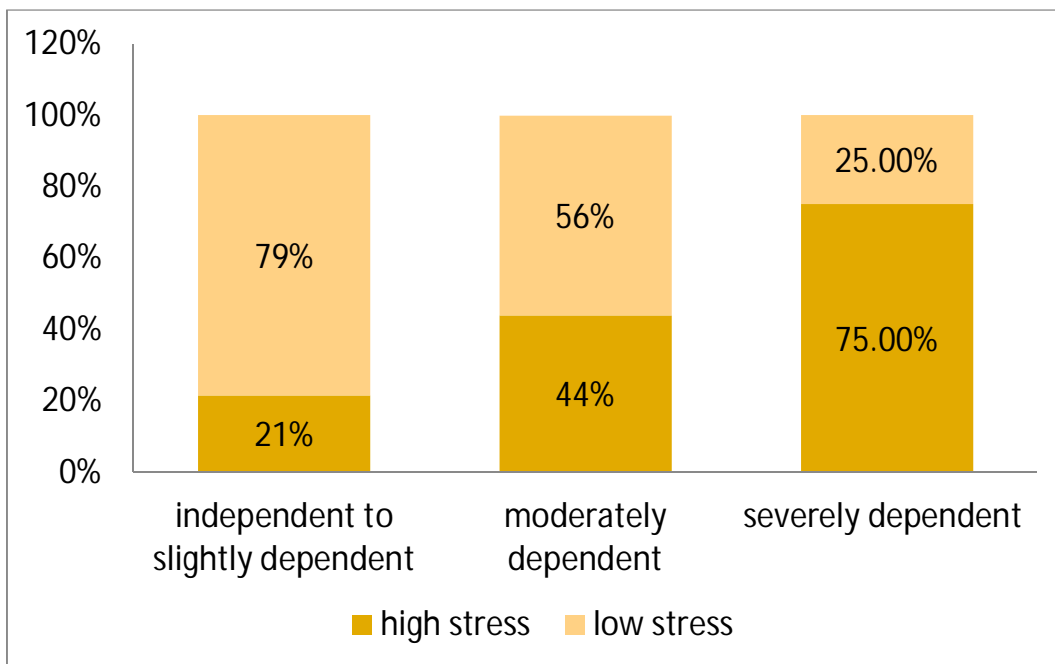
**Table 25. Association between co – morbid status of Care recipient and stress**

<b>Care recipient co – morbid status</b>	<b>Low stress</b>	<b>High stress</b>	<b>total</b>	<b>Chi square value</b>	<b>p value</b>
With no co – morbid conditions	12(75%)	4(25%)	16	2.544	0.111
With co – morbid conditions	89(54.3%)	75(45.7%)	164		

There was no statistically significant association between care recipient’s co – morbid status and stress (table.25).



**Fig. 7 Stress distribution based on caregiver's co-morbid status**



**Fig. 8 Stress distribution based on care recipient's dependency status**



**Table.26 Correlation between co –morbid conditions of care recipient and stress**

<b>Variable</b>	<b>Spearman’s Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Co – morbid conditions of caregiver	0.282	Weak uphill (positive)	<b>&lt;0.001</b>

There was a weak positive but statistically significant ( $p < 0.001$ ) correlation between co – morbid conditions of care recipient and stress. Increase in co-morbid conditions of care recipient was correlated with increase in stress (table.26).

### **5.3.3. Dependency status of care recipient and caregiver stress**

Barthel index was used to assess ADL performance. The mean score was  $78 \pm 14.8$ .

**Table.27 Association between care recipient’s dependency status and stress**

<b>Care recipient ADL status</b>	<b>Low stress</b>	<b>High stress</b>	<b>Total</b>	<b>Chi square value</b>	<b>p value</b>
Independent to slightly dependant	22(78.6%)	6(21.4%)	28	13.596	<b>0.001*</b>
Moderately dependant	74(56.1%)	58(43.9%)	132		
Severely to total dependant	<b>5(25%)</b>	<b>15(75%)</b>	<b>20</b>		

Caregivers of severely to total dependent recipients experienced the high level of stress (75%). The association was statistically significant ( $p = 0.001$ ) (table.27).

**Table.28 Correlation between activity of daily living (ADL) score of care recipient and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>P value</b>
ADL score of care recipient	- 238	Weak negative (downhill)	<b>0.001</b>

There was a weak negative but statistically significant ( $p=0.001$ ) correlation between ADL score of care recipient and stress. Increase in ADL score of care recipient was correlated with decrease in stress (table.28).

#### **5.4. Perceived social support and caregiver stress**

##### **5.4.1. Family support and caregiver stress**

**Table.29 Association between family support perceived by Caregiver and stress**

<b>Status of family support</b>	<b>Low stress</b>	<b>High stress</b>	<b>Total</b>	<b>Chi square value</b>	<b>p value</b>
Yes	71(76.3%)	22(23.7%)	93	35.262	<b>&lt; 0.001*</b>
No	30(34.5%)	57(65.5%)	87		

Caregivers lacking family support were highly stressed (65.5%) than the caregivers with adequate support. The association was found to be statistically significant ( $p < 0.001$ ) (table.29).

**Table.30 Correlation between family support and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Family support	- 0.484	Moderate downhill (negative)	<b>&lt;0.001</b>

There was moderate negative, statistically significant ( $p < 0.001$ ) correlation between family support and stress. Increase in family support was correlated with decrease in stress (table.30).

#### **5.4.2. Friends support and stress**

**Table.31 Association between friends support perceived by Caregiver and stress.**

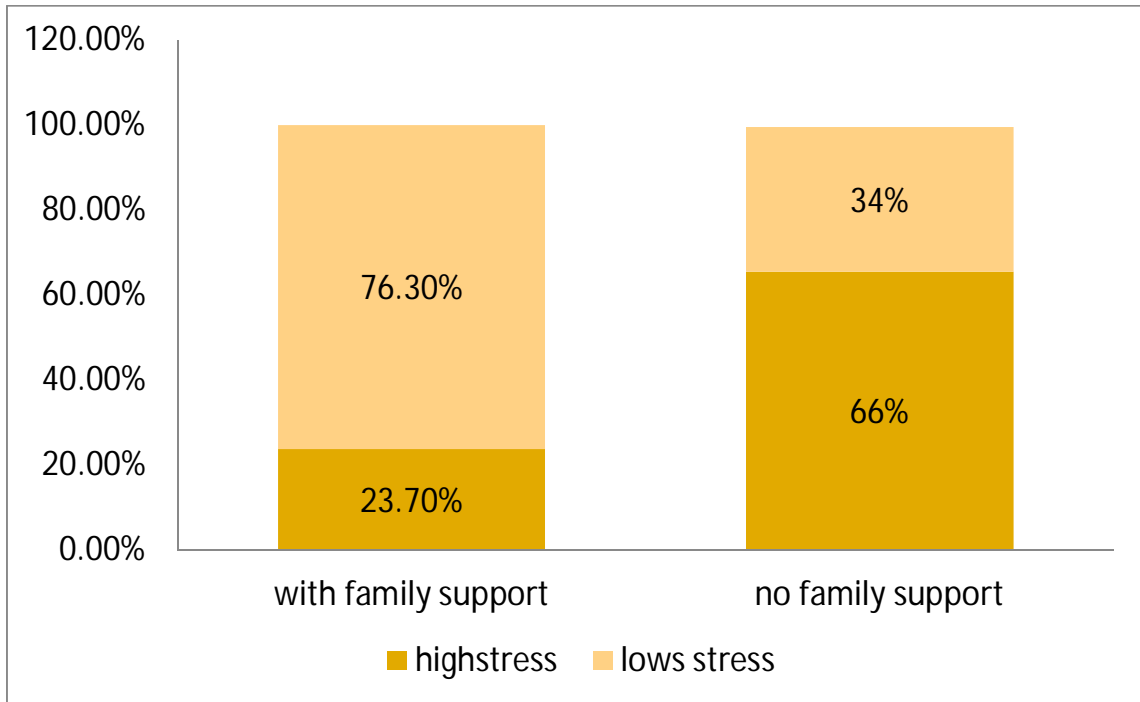
<b>Status of friends support</b>	<b>Low stress</b>	<b>High stress</b>	<b>Total</b>	<b>Chi square value</b>	<b>p value</b>
Yes	54 (79.4%)	14 (20.6%)	68	27.244	<b>&lt; 0.001*</b>
No	47(42%)	65(58%)	112		

Caregivers lacking friends support were highly stressed (58%) than the caregivers with adequate support. The association was found to be statistically significant ( $p < 0.001$ ) (table.31).

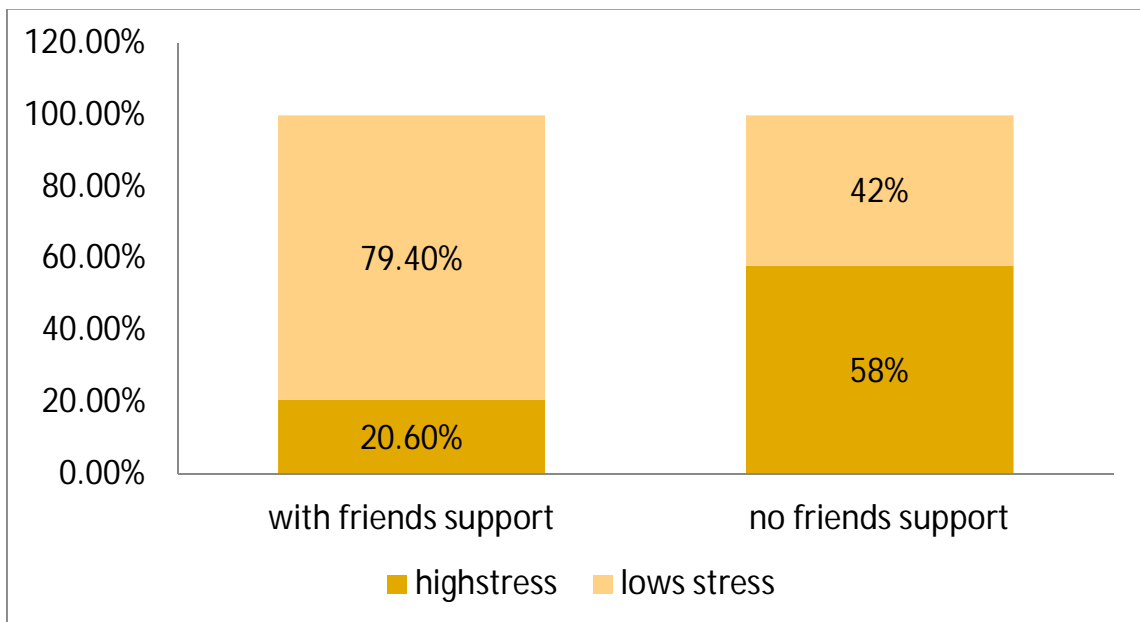
**Table.32 Correlation between friends support and stress**

<b>Variable</b>	<b>Spearman's Correlation(r) with caregiver stress outcome</b>	<b>Strength of Linear relationship</b>	<b>p value</b>
Friends support	- 0.491	Moderate downhill (negative)	<b>&lt;0.001</b>

There was a moderate negative, statistically significant ( $p < 0.001$ ) correlation between friends support and stress. Increase in friends support was correlated with decrease in stress (table.32)



**Fig.9 Stress distribution based on family support**



**Fig.10 Stress distribution based on friends support**

### 5.4.3. Social support perceived by caregiver and stress

**Table.33 Association between social support perceived by Caregiver and stress.**

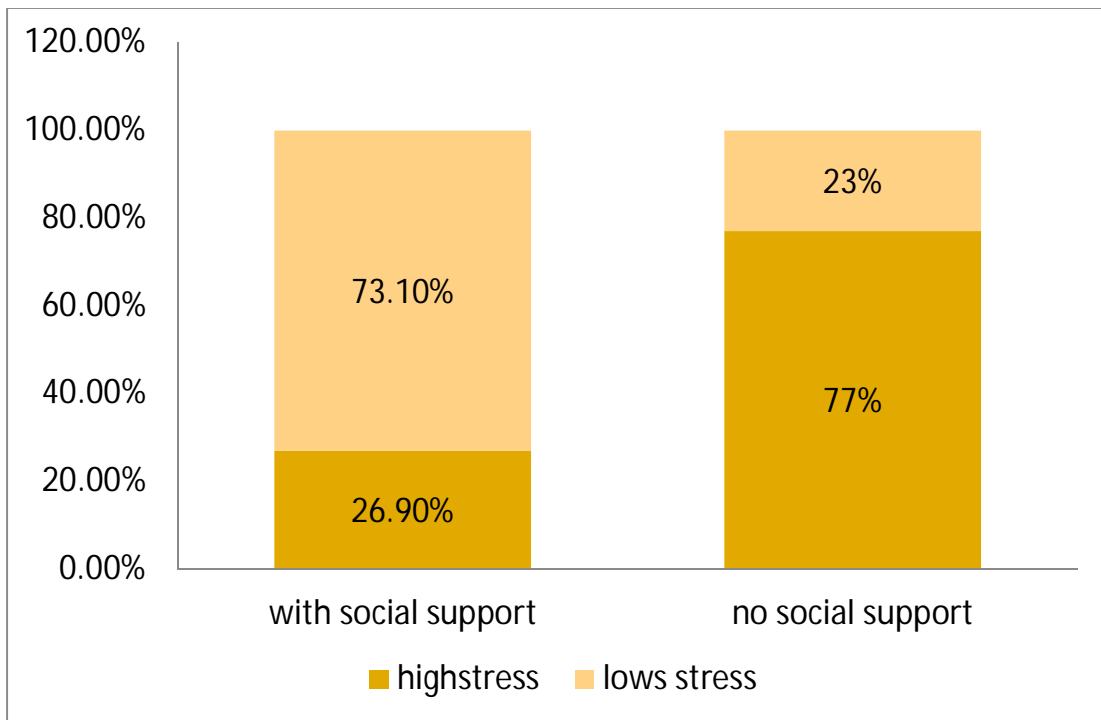
Caregiver's perceived – social support	Low stress	High stress	Total	Chi square value	p value
Yes	87(73.1%)	32(26.9%)	119	42.914	< 0.001*
No	14(23%)	47(77%)	61		

Caregivers lacking social support were highly stressed (77%) than the caregivers with adequate support. This association was found to be statistically significant ( $p < 0.001$ ) (table.33).

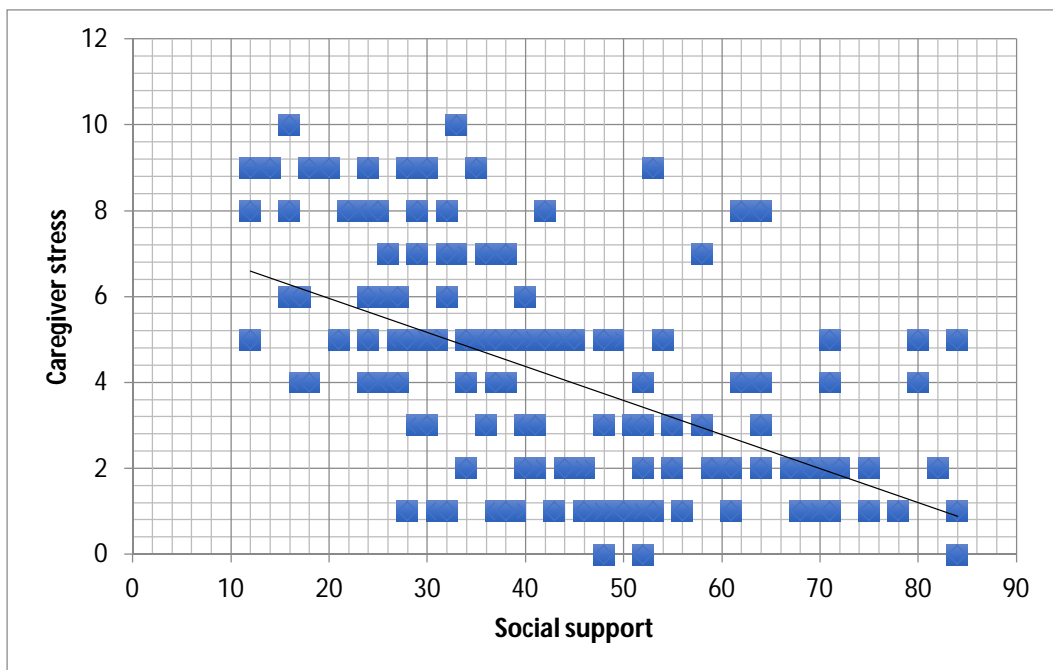
**Table.34 Correlation between caregiver's perceived social support and stress**

Variable	Spearman's Correlation(r) with caregiver stress outcome	Strength of Linear relationship	P value
Caregiver's Perceived social support	- 603	Strong downhill (negative)	<0.001

There was a strong negative, statistically significant ( $p < 0.001$ ) correlation between caregiver's perceived social support and stress. Increase in caregiver's perceived social support was correlated with decrease in stress (table.34).



**Fig.11 Stress distribution based on perceived social support**



**Fig.12 Linear relationship between social support and caregiver stress**

## 5.5. Factors associated with caregiver stress by Multivariate analysis –

### Binomial logistic regression

The factors which are significant in univariate analysis were entered for binomial logistic regression.

**Table.35 Binomial logistic regression between factors influencing and caregiver stress**

	<b>Variables</b>	<b>Adjusted odds ratio (95% C.I.)</b>	<b>p value</b>
<b>1</b>	<b>Gender of caregiver</b>	<b>2.593 (1.020 – 6.590)</b>	<b>0.045</b>
2	Age of caregiver	1.833 (0.642-5.231)	0.257
3	Age of care recipient	0.768 (0.223 – 2.639)	0.675
4	Relationship with care recipient	1.419(.666 – 3.023)	0.364
5	Caregiver educational status	1.264 (0.635- 2.517)	0.505
6	Care recipient dependency status	3.386 (0.763-15.025)	0.109
<b>7</b>	<b>Caregiver co-morbid status</b>	<b>3.350 (1.183-9.489)</b>	<b>0.023</b>
9	<b>Family support</b>	<b>3.808 (1.498-9.681)</b>	<b>0.005</b>
10	Friends support	1.134(0.414-3.107)	0.807
<b>11</b>	<b>Social support</b>	<b>3.618 (1.402-9.339)</b>	<b>0.008</b>

### **Interpretation (table.35)**

1. After having adjusted for other factors the odds of a female caregiver experiencing high level of stress was **2.593 times** the odds of male caregiver ( $p = 0.045$ ).
2. After having adjusted for other variables the odds of a caregiver with co-morbid conditions experiencing high level of stress is **3.350 times** the odds of caregiver without co- morbid conditions ( $p=0.023$ ).
3. After having adjusted for other variables the odds of a caregiver without family support experiencing high level of stress was **3.808 times** the odds of caregiver with family support ( $p= 0.005$ ).
4. After having adjusted for other variables the odds of a caregiver without social support experiencing high level of stress was **3.618 times** the odds of caregiver with social support ( $p= 0.008$ ).



# ***Discussion***

## 6. DISCUSSION

The study was conducted to estimate the level of caregiver stress among informal caregivers of elderly people. Among 180 participants, 78% of them were female caregivers. Wives (27.8%) and daughters – in law (27.8%) formed the major portions of study participants. Care recipients were equally distributed by gender. Prevalence of caregiver stress was found to be 43.9% (36.6% - 51.2% C.I).

Similar results were explored in the study conducted in Finland where the prevalence of moderate to severe level of caregiver stress or burden was 38%. In the study carried out in Singapore study prevalence of the stress was 28%. In the study carried out in Brazil, the prevalence of stress was found to be 23% while in Egyptian study the prevalence was found to be as high as 63.9%.

Most of the studies including the present study conducted in developing countries have revealed that there was significant level of stress prevailing among informal caregivers ranging between 25% and 50%. There were differences among studies in terms of influencing factors like Gender, getting older, role as spouse, education, co – morbid conditions, care recipient's dependent status and level of social support.

### **6.1. Female gender more prone to develop caregiver stress**

Nearly half of the female caregivers were highly stressed (48%). In case of male caregivers only 29% of them were highly stressed and the difference was found to be statistically significant ( $p=0.037$ ). Studies conducted in Singapore and Egypt revealed similar findings. But the study conducted in Finland did not find any gender difference in terms of stress experienced. Surprisingly in the study conducted in Nigeria, male caregivers experienced high level of stress than the female caregivers.

In the present study it was evident that nearly 79% of caregivers were female. While 94.7% of male caregivers were employed, only 31.7% of female caregivers were employed. In our socio-cultural context, women were expected and obligated to play the role of home makers. Men were expected to earn and bring up their families and so most of the time they might not be available to look after the care recipients. Women had to spend more time along with the caregivers (male – 10 hours 33 minutes +/- 3 hours 42 minutes, female – 17 hours +/- 36 minutes). In addition, they should also carry out other household works and rear their children.

Among highly stressed female caregivers, 59% of them were lacking social support. It showed that female caregivers might not be in position to share their problems with anybody else regarding the difficulties of caregiving. These might be the reasons for female caregivers more prone to be highly stressed.

## **6.2. Increase in Stress Levels with Increasing Caregiver's Age**

It was found in the study that both the groups of caregivers (group – aged between 40 to less than 60 years and group – aged 60 years and above) were experiencing high level of stress (54.2% and 66.1% respectively). These results were found to be contradicting with the findings from other studies conducted in Singapore and Nigeria. In the Nigerian study it was found that younger caregivers were more stressed than older counterparts.

Findings of the study which associated ( $p=0.001$ ) caregiver's age factor with stress ought to be accepted. In our country the informal caregivers were not provided with any form of support by the government. With increasing age their productivity and potential would deteriorate. On growing older they themselves would be transforming into near care seekers and become dependent on other earning family members. They would be gradually losing the position of decision maker and had to rely upon others. Deteriorating health condition due to various co- morbid conditions would magnify even the trivial caregiving tasks as more difficult tasks. Due to all these factors the elderly caregivers might have experienced high level of stress.

## **6.3. Caregiver stress increases as care recipient getting older**

In the study it was exposed that caregivers who were looking after the elderly people aged 70 years and above experienced higher level of stress (62%) than those caring the elderly people aged less than 70 years (39.9%) and the difference was found to be significant ( $p=0.002$ ). The simple reason behind the

finding was that most of the caregivers aged less than 40 years (60.8%) who were experiencing low level of stress were caring the care recipients aged less than 70 years. On the other hand majority (88%) of the caregivers aged 40 years and above who were experiencing high level of stress were looking after care recipients aged 70 years and above.

#### **6.4. Increased Stress Levels experienced by Spousal Caregivers**

Our study had highlighted that spousal caregivers were experiencing high level of stress (59.3%) and the association was found to be significant ( $p=0.006$ ). Singapore study had revealed similar result. To be more precise, Egyptian study had specifically pointed out that wives were experiencing high level stress (73%). Brazilian study too revealed similar finding.

Among spousal caregivers, wives were highly stressed than the husbands. As mentioned earlier most of the women were not working and dependent upon their husbands. There was a possibility that they would have developed stress when their life partners by themselves had become dependent. Unfortunately for a wife, the person from whom she was supposed to get support was not feasible because the life partner by himself would be the in the position of care recipient. Most of the care recipients (91%) had one or more co-morbid conditions. On sighting their beloved spouse suffering, their stress level would increase. Absence of coping mechanism might worsen the situation. These were the reasons exposed from our study to substantiate the fact that spousal caregivers especially wives would experience high level of stress.

### **6.5. Caregiver stress and educational status**

The study emphasizes that caregivers who have studied up to middle schooling (53.1%) were experiencing high level of stress than those who have completed high school and above (32.9%). The difference was found to be significant at  $p < 0.01$ . Similar results were explored in Brazilian and Nigerian studies. But in Finland study, there was no association between the education of caregiver and stress level. As already mentioned nearly 164(91%) of care recipients were suffering from one or more co-morbid conditions. There was some possibility that a highly educated person would be able to understand health related problems and tackle effectively than the less educated. Highly educated caregiver would be in more productive job and able to provide better care with minimal strain.

### **6.6. Co – morbid conditions of caregivers potentiate stress level**

Caregivers with at least one co – morbid condition were suffering from high level of stress (60.2%) than the caregivers without any co – morbid condition (26.4%) and the difference was found to be significant ( $p = 0.001$ ). It was very obvious that caregiver suffering from co- morbid conditions would not be able to render caregiving tasks effectively. They by themselves would be in the position to expect care from other family members. Guilty feel arisen due to failure to play the satisfactory role of caregiver would have led on to experience high level of stress.

### **6.7. Stress not influenced by care recipients' co-morbid conditions**

In Singapore study it was mentioned that caregivers looking after the elder people suffering from co morbid conditions like dementia, hypertension, etc. were highly stressed. But in our study, co morbid status of care recipients was not statistically associated with stress. In our social background, it was well expected by the caregivers that on growing older, co morbid conditions would set in. Without any anxiety the native caregiver would accept the care recipient with co morbid conditions.

### **6.8. Absence of influence of caregiving duration on stress**

In Finland study, there was a significant positive correlation between the duration of caregiving and stress ( $r = 0.216$ ,  $p < 0.05$ ). In the study no such significant correlation was found between duration of caregiving and stress level ( $r = 0.71$ ,  $p = 0.346$ ). Probably on due course, caregiver might have developed some coping mechanism. Duration of caregiving would be the minor determinant when compared with various other variables.

### **6.9. More the severity of care recipient's dependency higher the stress level**

It was exposed from the study that caregivers looking after severely to totally dependent caregivers were more stressed than others. Lower the ADL score, more the stress would be experienced by the caregivers (spearman's coefficient  $r = -0.238$ , weak downhill negative linear relationship for ADL score and caregiver stress). Similar result was found in Singapore study in which lower the ADL score, more the stress experienced by the caregivers ( $r = -0.275$ ,  $p, 0.05$ ).

Finland had shown similar results. In Egyptian study, caregivers caring for severely dependent people experienced high level of stress (77.4%).

As the care recipient became more dependent, caregiver was obliged to perform varying degree of physical task. It was found that 19.4% of caregivers aged 60 years and above were looking after severely dependent care recipients. On the other end, only 10.2% of caregivers aged between 40 years and less than 60 years and 8.2% of caregivers aged less than 40 years were looking after severely dependent care recipients. On growing older, health condition of caregivers would get deteriorated and they by themselves would become dependent on others. Ultimately assisting the severely and totally dependent care recipients would lay down high stress on care givers with declining health condition.

#### **6.10. Stress increases with fall in family support to caregiver**

It was evident from the study that caregivers lacking support from their families were experiencing high level of stress (65.5%). On the other end caregivers with adequate family support were low stressed (76.3%). Among 180 caregivers only 8 participants were relatives (4.4%) other than spouses (30%), children (37.8%) and daughters – in law (27.8%). In an Indian scenario, caring of elderly relative at home is considered as an inevitable socio - cultural responsibility of the spouse or children or daughter in law. This social arrangement would benefit the dependent care recipients. Unfortunately this obligation might have been misinterpreted by other family members as the sole



duty of those primary caregivers alone. So caregivers were in an odd situation, thereby lacking support from other family members in all the aspects. Apart from lacking financial support and assistance in care delivering tasks, the most they lack would be psychological and emotional support from their family members. Thus the caregivers lacking family support would experience high level of stress.

### **6.11. High stress among caregivers lacking friends support**

The study had focused that caregivers lacking support from friends were experiencing high level of stress (58%). On the other end caregivers with adequate friends support were low stressed (79.4%). But on applying binomial logistic regression, the difference was found to be statistically not significant (adjusted odd's ratio – 1.945, C.I – 0.807- 4.688, p= 0.138). Indian society is a closed rigid system. From the study it was evident that even though 180 caregivers had some sort of relationship with their friends and neighbours, only 68 (37.8%) of them had adequate friends support (**out of 68 participants, 54(79.4%) – low stress, 14(20.6%) – high stress**).

It shows that in spite of having friends, the degree of intimacy would be doubtful. The opportunities to share personal issues were heavily restricted. In the absence of dissemination of personal matters within the friends circle, it was obvious that most of the caregivers (112, 62.2%) would be lacking friends support and there by experiencing high level of stress (**58%**).

## **6.12. Caregiver perceiving low social support were highly stressed**

It was explored that caregivers lacking social support were highly stressed (77%). On the other end, caregivers perceiving adequate social support were less stressed (26.9%) and the difference was statistically significant ( $p < 0.001$ ). There was a strong negative statistically significant ( $r = -0.603$ ,  $p < 0.001$ ) correlation between perceived social support and stress. It implied that on perceiving more social support, caregiver stress level would fall rapidly. In Finland study similar correlation was found between perceived social support and caregiver stress ( $r = -0.417$ ,  $p < 0.001$ ).

Family support and friends support are the major domains of perceived social support. There was a very strong positive statistically significant ( $r = 0.845$ ,  $p < 0.001$ ) correlation between family support and perceived social support. Likewise there was also a strong positive statistically significant ( $r = 0.775$ ,  $p < 0.001$ ) correlation between friends support and perceived social support. Though the caregivers with adequate friends support were experiencing low level of stress (20.6%), their absolute number was low (68, 37.8%).

Our Indian society remains to be a closed system. In spite of having friends and neighbours the level of intimacy would be lesser. Thus prevailing social conditions had shown that family structure and its extent of support continue to remain the major contributors to the social support, phasing out the support from other domains like friends and neighbours. If a caregiver was able to perceive adequate support from family members it would suffice to hasten his/her

perceived social support level irrespective of the level of support from other domains.

From the study, it was evident that female caregivers were highly stressed. 68.3% of them were home makers. They might not receive adequate support except for financial support from the earning family members. It was also revealed that nearly half of the participants were lacking family support (48.3%). In such circumstances, social support from friends and neighbours could not be neglected.

The study had clearly focused that caregivers being spouse, getting older with emerging co – morbid conditions within themselves were more prone to be highly stressed. In the absence of adequate support from the family or non-availability of potential family members, caregivers had to conceal their difficulties. On lacking social support from neighbours and friends who were the only remaining pacifiers, caregivers might develop stress. Social support was also utmost important in terms of physical assistance on the event of ageing care recipient becoming more dependent.

Ageing is always accompanied with considerable number of health related issues. They may require varying degree of physical assistance. Extraordinary response from the neighbourhood may be required for one or more of the components of geriatric care. It may include a range of activities like assisting in physical tasks at domiciliary level, shifting to health facilities and even playing the role of co – attenders in the absence of adequate family support.

As already discussed, geriatric population is growing. The trend of nuclear families with or without extension is at increasing pace has resulted in non-availability of secondary caregivers. In the absence of support from family members both physically and emotionally, the need for social support has become inevitable. Society can no longer remain as closed system. So family caregivers should come forward to breach their social barriers and seek social support.

# ***Summary***

## 7. SUMMARY

The study was conducted among 180 informal caregivers of elderly people to assess the level of caregiver stress and it was found to be 43.9% (36.6% - 51.2% C.I.).

- While almost half of the female caregivers were highly stressed (48%), only less than a third of male caregivers were stressed (29%) and the gender difference was statistically significant ( $p=0.037$ ).
- Caregivers in the age group of 60 years & above ( $P=0.001$ ) and Caregivers of care recipients aged 70 and above ( $P=0.002$ ) were highly stressed. The association with age factor was statistically significant.
- Educational status of the caregivers had statistically significant ( $p=0.007$ ) impact and so participants educated up to middle schooling were highly stressed.
- There was a definite significant ( $p=0.006$ ) influence of caregiver's relationship with care recipient, on stress where spouses were more stressed than any other relatives.
- Caregivers with co – morbid conditions were more stressed than others with no such condition and the association was found to be statistically significant ( $p=0.001$ ).

- Caregivers of severely dependent elderly people were experiencing high level of stress and the association of dependency status with stress was statistically significant ( $p=0.001$ ).
- Caregivers lacking family, friends and social supports were hugely stressed than the caregivers with adequate support from these sources and their associations with stress were statistically significant ( $p<0.001$ ).

# ***Conclusion***



## 8. CONCLUSION

- Most of female caregivers were not employed and had to be dependent on earning family members. In the absence of support from family they were more likely to be stressed.
- Spousal caregivers by themselves were in the position of impending care recipients. In the event of getting older along with emergence of co-morbid conditions, caregiving task might have developed stress within spousal caregivers.
- Growing geriatric population is always accompanied by emerging disease burden and increase in elderly dependents. Available caregivers were definitely in the need of psychosocial support along with physical assistance from their family members, friends or neighbours. But the study findings revealed a paradoxical situation prevailing in the community. Almost half of the caregivers were lacking family support. Nearly two-third of the caregivers were lacking friends support. Unless the family caregivers were able to extract social support from their families, friends and neighbours, most of them would remain highly stressed.

# ***Recommendations***

## **9. RECOMMENDATIONS**

- Well-being of care recipients depends predominantly upon the well-being of caregivers. The role of non-communicable Diseases (NCD) clinics should be widened to provide health care services like screening and also counselling amenities for caregivers.
- NCD clinics should educate caregivers about the basic elements of geriatric care that can be rendered at domiciliary level.
- Day care centres exclusively for elderly people shall be organised where minor health problems can be dealt. Ambient time and scope should be provided for elderly, so that they can interact with available health personnels and share their grievances. Thus arrangement of Day care centres will lessen the burden laid on caregivers and thereby bring down the stress level.

# ***Limitations***

## **10. LIMITATIONS**

- The study was limited with estimating the level of caregiver stress among caregivers. Financial strain and other constraints were not assessed.
- Though the study associated the co-morbid status of participants with caregiver stress, the influence of each condition on stress level was not studied independently.
- Exploration of social support among caregivers was restricted with its major domains of family and friends. Utilisation status of various social welfare services and their influence on caregiver stress was not assessed.

# ***Bibiliography***

## 11. BIBLIOGRAPHY

1. Mehta KK. Stress among family caregivers of older persons in Singapore. *Journal of Cross Cult of Gerontology*.2005 Dec; 20(4):319-34. Available from : [http://tsaofoundation.org/doc/cg\\_stress.pdf](http://tsaofoundation.org/doc/cg_stress.pdf)
2. Park K. Park's textbook of Preventive and Social Medicine. 24<sup>th</sup> ed. Jabalpur: M/s Banarsidas Bhanot Publishers; 2017 Jan. 631 p
3. Gleviczky V. Study of the burden of informal caregivers of elderly in Kokkola [dissertation on the internet]. [ cited 2016 Dec 2 ]. Finland: Centria University of Applied Sciences;2014. Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.955.6332&rep=rep1&type=pdf> -- 16
4. World Health Organisation. Health statistics and information systems [Internet]. [cited 2016 Dec 2]. Available from : <http://www.who.int/healthinfo/survey/ageingdefnolder/en/>
5. World Health Organisation. Ageing and health [Internet]. 2018 Feb 5. [cited 2016 Dec 2]. Available from : <http://www.who.int/news-room/fact-sheets/detail/ageing-and-health>
6. Metzelthin SF et. al. Positive and negative outcomes of informal caregiving at home and in institutionalised long-term care: a cross-sectional study. *BMC Geriatrics*. 2017 17(232). Available from: [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5635563/pdf/12877\\_2017\\_Article\\_620.p](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5635563/pdf/12877_2017_Article_620.p)
7. Paul S. Informal vs. Formal caregivers. stanolaw form [Internet]. 2015 Nov 25. [cited 2016 Dec 4]. Available from : <http://stanolaw.com/informal-vs-formal-caregivers/>
8. Family Caregiver Alliance ,National Center on Caregiving [ Internet]. [cited 2016 Dec 5]. Available from: <https://www.caregiver.org/definitions-0>

9. Los Angeles County Department of Public Health. LA Health [Internet]. 2010 Feb [cited 2016 Dec 7]. Available from : [http://publichealth.lacounty.gov/ ha/reports/habriefs/2007/Caregiving\\_Final.pdf](http://publichealth.lacounty.gov/ha/reports/habriefs/2007/Caregiving_Final.pdf)
10. Ugargol AP, Bailey A. Family caregiving for older adults: gendered roles and caregiver burden in emigrant households of Kerala, India. *Asian Population Studies*. 2018 Jan 12; 14(2): 194 – 210. Available from : <https://www.tandfonline.com/doi/pdf/10.1080/17441730.2017.1412593?needAccess=true>
11. Kaplan DB, Berkman BJ, Fitzdale HR, Family Caregiving of the Elderly [Internet]. [cited 2016 Dec 18]. Available from : <https://www.msmanuals.com/home/SearchResults?query=Family+Caregiving+for+the+Elderly&icd9=MM170>
12. American Senior Communities. The Challenges facing a Family Caregivers [Internet]. 2015 Oct [cited 2016 Dec 21]. Available from : <https://www.asccare.com/the-challenges-facing-a-family-caregiver/>
13. Bruggen SV. Problems experienced by informal caregivers with older care recipients with and without cognitive impairment. *Home Health Care Services Quarterly* 2016; 35 (1): 11–24. Available from : <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4917916/pdf/whhc-35-011.pdf>
14. The Royal Australian College of General Practitioners Ltd. CO16 Care of older people contextual Unit [Internet]. 2016. [cited 2017 Jan 5]. Available from : <https://www.racgp.org.au/Education/Curriculum/Care-of-older-people>
15. Yates ME, Tennstedt .S, Chang B. Contributors to and Mediators of Psychological Well – Being for Informal Caregivers. *Journal of Gerontology : Psychological Sciences*. 1999; 54B (1): 12 – 22. Available from : <https://vdocuments.site/contributors-to-and-mediators-of-psychological-well-being-for-informal-caregivers.html>



16. Verbakel E, Metzelthin SF, Kempen GIJM, Caregiving to Older Adults: Determinants of Informal Caregivers' Subjective Well-being and Formal and Informal Support as Alleviating Conditions. *Gerontol B Psychol Sci Soc Sci*. 2016 Apr 6; 00(00): 1 – 13. Available from : <https://academic.oup.com/psychsocgerontology/article-abstract/73/6/1099/2632040?redirectedFrom=fulltext>
17. Casado B, Sacco P. Correlates of Caregiver Burden Among Family Caregivers of Older Korean Americans. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*. 2011 Oct 31; 67(3): 331 – 336. Available from: <https://pdfs.semanticscholar.org/8dc9/2aa13b288a05243e2efc312c8d21478cef57.pdf>
18. Pearlin L I, Mullan J T, Semple S J, Skaff M M. Caregiving and the Stress Process: An Overview of Concepts and Their Measures. *The Gerontological Society of America*.1990;30(5). Available from: <https://pdfs.semanticscholar.org/d09a/cd197db53bc983ab9124701148832770612a.pdf>
19. Roth DL, Perkins M, Wadley VG, Temple EM, Haley WE. Family Caregiving and Emotional Strain: Associations with Quality of Life in a Large National Sample of Middle-Aged and Older Adults. *Qual Life Res*. 2009 Aug; 18(6): 679–688. Available from : <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2855243/pdf/nihms174083.pdf>
20. Mlinac ME, Feng MC. Assessment of Activities of Daily Living, Self-Care, and Independence. *Archives of Clinical Neuropsychology*.2016 Aug 30; 31(6): 506–16. Available from : <https://academic.oup.com/acn/article/31/6/506/1727834>
21. Lewis C, Shaw K. The (Original) Barthel Index of ADLs [Internet] [cited 2017 Jan 17]. Advance healthcare network. Rehabinsider; 2008 Sep 25. Available from : <http://rehab-insider.advanceweb.com/the-original-barthel-index-of-adls/>

22. Casado RP, Osuna AF, Moral PP, Martinez MR, Morcilo AR. Social support and subjective burden in caregivers of adults and older adults: A meta-analysis. *Plos one*. 2018 Jan 2; 13(1). Available from : <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5749735/pdf/pone.0189874.pdf>
23. Chulz U, Schwarzer R. Social support in coping with illness: The Berlin Social Support Scales (BSSS)].*Diagnostica*. 2003; 49: 73-82. Available from : <http://userpage.fu-berlin.de/~health/bsssdocument.pdf>
24. Biopsychosocial assessments in aging. Biopsychosocial Assessment Tools for the Elderly – Assessment Summary Sheet. Available from : [https://instruct.uwo.ca/kinesiology/9641/assessment\\_list.html](https://instruct.uwo.ca/kinesiology/9641/assessment_list.html)
25. Department of Community and Family Medicine, Duke University Medical Center, Durham, NC, USA. Duke social support and stress scale (DUSOCS). Available from : <https://cfm.duke.edu/sites/cfm.duke.edu/files/cfm/Research/HealthMeasures/DUSOCS.pdf>
26. Zimet GD, Dahlem NW, Farley GK. The multidimensional scale of perceived social support. *Journal of personality assessment*. 1988; 52(1): 30-41. Available from : <https://www.researchgate.net/publication/240290845/download>
27. Hopkins RW, Kilik LA. The Kingston caregiver stress scale (KCSS). Providence Care Mental Health Services Kingston, Ontario, Canada. 2016. Available from: [http://nebula.wsimg.com/979c665ffd41f5c5a0f8987c3817d273?AccessKeyId=954A289F7CDF75707C10 & disposition = 0&alloworigin=1](http://nebula.wsimg.com/979c665ffd41f5c5a0f8987c3817d273?AccessKeyId=954A289F7CDF75707C10&disposition=0&alloworigin=1)
28. Hajell P, Alvariza A, Westergren A, Arestedt K. Assessment of burden among family Caregivers of people with Parkinson's Disease using the Zarit Burden Interview. *Journal of pain and symptom management*. 2017 Feb ; 53(2). Available from: [https://www.jpmsjournal.com/article/S0885-3924\(16\)30761-8/pdf](https://www.jpmsjournal.com/article/S0885-3924(16)30761-8/pdf)

29. Sullivan MT. Caregiver strain index (CSI). : The Journal for the Home Care and Hospice Professional. 2003 Mar; 21(3): 197- 98. Available from : [https://journals.lww.com/homehealthcareurseonline/Citation/2003/03000/Caregiver\\_Strain\\_Index\\_\\_CSI\\_.24.aspx](https://journals.lww.com/homehealthcareurseonline/Citation/2003/03000/Caregiver_Strain_Index__CSI_.24.aspx)
30. Salama RAA, El- soud FAA. Caregiver burden from caring of impaired elderly. IJPH. 2012; 9(4). Available from : <https://ijphjournal.it/article/download/8662/7820>
31. Prasad BD, Rani NI. Older Persons, and Caregiver Burden and Satisfaction in Rural Family Context. Indian journal of Gerontology, 2007; 21(2): 216-2. Available from : [astonjournals.com/manuscripts/Vol2011/ASSJ-29\\_Vol2011.pdf](http://astonjournals.com/manuscripts/Vol2011/ASSJ-29_Vol2011.pdf)
32. Gazhali SB, et al. burden of caregivers of the elderly with chronic illnesses and their associated factors in an urban setting in Malaysia. Malaysian journal of public health medicine. 2015; 15(1): 1-9. Available from : <https://www.interestjournals.org/articles/prevalence-and-predictors-of-burden-among-family-caregivers-of-the-elderly-in-a-western-city-in-turkey-a-communitybased-.pdf>
33. Loureiro LSN, et al, Burden in family caregivers of the elderly: prevalence and association with characteristics of the elderly and the caregivers. Rev Esc Enferm USP. 2013; 47(5): 1129 – 36. Available from : [www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0080-62342013000501129](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0080-62342013000501129)
34. Evci KED, et al, Prevalence and predictors of burden among family caregivers of the elderly in a Western City in Turkey: a community-based, cross-sectional study. J. Med. Med. Sci. 2012; 3(9): 569 – 77. Available from: <https://www.interestjournals.org/articles/prevalence-and-predictors-of-burden-among-family-caregivers-of-the-elderly-in-a-western-city-in-turkey-a-communitybased-.pdf>

35. Okoye UO, Asa SS. Caregiving and Stress: Experience of People Taking Care of Elderly Relations in South-eastern Nigeria. *Arts and Social Sciences Journal*. 2011; Available from : [astonjournals.com/manuscripts/Vol2011/ASSJ-29 Vol2011.pdf](http://astonjournals.com/manuscripts/Vol2011/ASSJ-29%20Vol2011.pdf)
36. Family Caregiver Alliance.National Center on Caregiving [Internet]. 2014 Jan [cited 2016 Dec 5]. Available from : <https://www.caregiver.org/definitions-0>
37. Kaur S, Kiran UV. Stress among Parents and Caregivers of Differently Abled Children. *Journal for Studies in Management and Planning*. 2015 Aug; 01(07): 172–84. Available from : [https://www.researchgate.net/publication/307638821\\_Journal\\_for\\_Studies\\_in\\_Management\\_and\\_Planning\\_Stress\\_among\\_Parents\\_and\\_Caregivers\\_of\\_Differently\\_Abled\\_Children\\_Journal\\_for\\_Studies\\_in\\_Management\\_and\\_Planning](https://www.researchgate.net/publication/307638821_Journal_for_Studies_in_Management_and_Planning_Stress_among_Parents_and_Caregivers_of_Differently_Abled_Children_Journal_for_Studies_in_Management_and_Planning)

# ***Annexures***

**ANNEXURE 1**  
**INFORMATION SHEET**

**“A Study on Caregiver stress and social support perceived among Informal Caregivers of Elderly people”.**

In this study, we have planned to study the level of caregiver stress and social support perceived among caregivers of elderly people.

In this study, we will be asking questions regarding Socio demographic details, co-morbid conditions of both your selves and care recipient. The privacy of the participants in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time. Your decision will not result in any loss of benefits to which you are otherwise entitled.

The results of the study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment or prevention.

**Signature of investigator**

**Signature of the participant**

## ஆய்வு தகவல் தாள்

“வயதானவர்களின் முறைசாரா கவனிப்பாளர்களிடையே நிலவும் அழுத்தம் மற்றும் சமூக ஆதரவு ,ஓர் ஆய்வு”.

இந்த ஆய்வில் தங்களுடைய சமூக விவரம் மற்றும் நாள்பட்ட நோய்களின் விவரம் கேட்கப்படும்.

இந்த ஆய்வின் முடிவுகளை அல்லது கருத்துக்களை வெளியிடும் போதோ அல்லது ஆய்வின் போதோ தங்களது பெயரையோ அல்லது அடையாளங்களையோ வெளியிட மாட்டோம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த ஆய்வில் பங்கேற்பது தங்களுடைய விருப்பத்தில் பேரில் தான் இருக்கிறது. மேலும் நீங்கள் எந்நேரமும் இந்த ஆய்விலிருந்து வெளியேறலாம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

இந்த சிறப்பு பரிசோதனையின் முடிவுகளை ஆய்வின் பொது அல்லது ஆய்வின் முடிவின் போது தங்களுக்கு அறிவிப்போம் என்பதையும் தெரிவித்துக்கொள்கிறோம்.

**ஆராய்ச்சியாளர் கையொப்பம்**

**பங்கேற்பாளர் கையொப்பம்**

## ANNEXURE 2

### INFORMED CONSENT FORM

#### **“A Study on Caregiver stress and social support perceived among Informal Caregivers of Elderly people”.**

**Name of the participant:**

**Age/Sex:**

**Study ID No:**

**Date:**

(1) I have been explained in detail about the study and its procedure. I confirm that I had completely understood the study and have had the opportunity to ask questions

(2) I understand that my participation in the study is voluntary and that I'm free to withdraw at any time, without giving any reason, without their medical care or legal rights being affected.

(3) I understand that the principal investigator, others working on the investigator's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However I understand that my identity will not be revealed in any information released to third parties or published.

(4) I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s).

(5) I agree to my participation in the above study.

**Signature of investigator**

**Signature of the participant**

Date:



## ஆய்வு ஒப்புதல்கடிதம்

“வயதானவர்களின் முறைசாரா கவனிப்பாளர்களிடையே நிலவும் அழுத்தம் மற்றும் சமூக ஆதரவு ,ஓர் ஆய்வு”.

பெயர்:

வயது:

பால்:

ஆய்வு சேர்க்கை எண்:

தேதி:

1. இந்த ஆய்வின் விவரங்களும் அதன் நோக்கங்களும் முழுமையாக எனக்கு தெளிவாக விளக்கப்பட்டது. எனக்கு விளக்கப்பட்ட விஷயங்களை நான் புரிந்து கொண்டு நான் எனது சமதத்தைத் தெரிவிக்கிறேன்.
2. இந்த ஆய்வில் பிறரின் நிர்பந்தமின்றி என் சொந்த விருப்பத்தின் பேரில் தான் பங்கு பெறுகிறேன் மற்றும் நான் இந்த ஆய்விலிருந்து எந்நேரமும் வெளியேறலாம் என்பதையும் அதனால் எந்த பாதிப்பும் ஏற்படாது என்பதையும் நான் புரிந்து கொண்டேன்.
3. இந்த ஆய்வின் விவரங்களை கொண்ட தகவல் தாளை பெற்றுக்கொண்டேன். நான் என்னுடைய சுயநினைவுடன் மற்றும் முழு சுதந்திரத்துடன் இந்த மருத்துவ ஆய்வில் என்னை சேர்த்துக்கொள்ள சம்மதிக்கிறேன்.
4. ஆய்வாளர் மற்றும் அவரை சார்ந்தவர்களோ நெரிமுறைக்குழு உருப்பினர்களோ நான் இந்த ஆய்விலிருந்து விலகினாலும் என்னுடைய அனுமதியின்றி எனது உடல்நிலை குறித்த தகவல்களை இந்த ஆய்விற்கோ இது தொடர்பான வேற ஆய்விற்கோ பயன்படுத்திக்கொள்ள முடியும் என்று புரிந்து கொண்டு சம்மதம் அளிக்கிறேன். ஆனாலும் எனது அடையாளம் வெளியிடப்பட மாட்டாது என்பதை புரிந்து கொள்கிறேன்.
5. இந்த ஆய்வின் தகவல்களையும் முடிவுகளையும் அறிவியல் நோக்கத்திற்காக பயன்படுத்துவதற்கு நான் அனுமதிக்கிறேன். இந்த ஆய்வில் பங்குப்பெற நான் சம்மதிக்கிறேன்.

ஆராய்ச்சியாளர்கையொப்பம்

பங்கேற்பாளர்கையொப்பம்

### ANNEXURE 3

#### QUESTIONNAIRE

A) a) Sociodemographic details

mobile no -

	CAREGIVER	CARERECIPIENT
<b>NAME</b>		
<b>AGE</b>		
<b>GENDER</b>		
<b>RESIDENTIAL ADDRESS</b>		
<b>EDUCATION</b>		
<b>TYPE OF OCCUPATION</b> Fulltime /part time/ retired/ not working		
<b>OCCUPATION DETAILS</b>		
<b>INCOME</b> (per month in Rs)		
<b>RELIGION</b>		

**b) DETAILS PF CARE GIVING DETAILS**

<b>RESIDENTIAL STATUS</b>  1.living with care recipient  2.Within walkable distance of care recipient's residence  3. Far away and can reach the carer only by 2 wheeler/bus/others	
<b>CAREGIVER'S MARITAL STATUS</b>	married/unmarried/separated/widow(er)
<b>CAREGIVER'S FAMILY COMMITMENT-</b> committed to look after his/her own individual family apart from the care recipient	YES/NO
<b>RELATIONSHIP WITH CARERECIPIENT</b>	
<b>DURATION OF CARE GIVING</b> (Years & month)	
<b>TIME SPENT IN CAREGIVING</b> (hours/day)	

c)

<b>CO-MORBID CONDITIONS</b>	<b>CAREGIVER(Yes/No)</b>	<b>CARERECIPIENT(Yes/No)</b>
Diabetes		
Hypertension		
CVA		
Joint related problems		
Bladder incontinence		
Bowel incontinence		
Low mood		
Memory related problem		
Behaviour problems eg- agitation, aggression		
Sleep related problems		
Neurological disorders eg. paraplegia		
Poor visual acuity		
Hard of hearing		

**d) ASSESSMENT OF ACTIVITIES OF DAILY LIVING (ADL) OF CARE RECIPIENT-**

**THE  
BARTHEL  
INDEX**

Patient Name: \_\_\_\_\_  
 Rater Name: \_\_\_\_\_  
 Date: \_\_\_\_\_

Activity	Score
<b>FEEDING</b> 0 = unable 5 = needs help cutting, spreading butter, etc., or requires modified diet 10 = independent	_____
<b>BATHING</b> 0 = dependent 5 = independent (or in shower)	_____
<b>GROOMING</b> 0 = needs to help with personal care 5 = independent face/hair/teeth/shaving (implements provided)	_____
<b>DRESSING</b> 0 = dependent 5 = needs help but can do about half unaided 10 = independent (including buttons, zips, laces, etc.)	_____
<b>BOWELS</b> 0 = incontinent (or needs to be given enemas) 5 = occasional accident 10 = continent	_____
<b>BLADDER</b> 0 = incontinent, or catheterized and unable to manage alone 5 = occasional accident 10 = continent	_____
<b>TOILET USE</b> 0 = dependent 5 = needs some help, but can do something alone 10 = independent (on and off, dressing, wiping)	_____
<b>TRANSFERS (BED TO CHAIR AND BACK)</b> 0 = unable, no sitting balance 5 = major help (one or two people, physical), can sit 10 = minor help (verbal or physical) 15 = independent	_____
<b>MOBILITY (ON LEVEL SURFACES)</b> 0 = immobile or < 50 yards 5 = wheelchair independent, including corners, > 50 yards 10 = walks with help of one person (verbal or physical) > 50 yards 15 = independent (but may use any aid; for example, stick) > 50 yards	_____
<b>STAIRS</b> 0 = unable 5 = needs help (verbal, physical, carrying aid) 10 = independent	_____
<b>TOTAL (0-100):</b> _____	

## B) CAREGIVER STRESS SCALE

Instructions- Read each statement carefully. Indicate how you feel about each statement and tick either "YES" or "NO"

On looking after my elderly relative/well known person,

S.NO	Items	YES	NO
1	Having restless, disturbed nights		
2	Feeling run down and exhausted		
3	Feeling of tightness or pressure		
4	Feeling constantly under stress		
5	Being incapable of making decisions		
6	Being unable to enjoy day to day life		
7	Getting irritable and hot tempered		
8	Feeling nervous		
9	Getting scared or panicky for no good reason		
10	Feeling that life is not worth living		

வயதானவர்களின் கவனிப்பாளர்களுக்கு ஏற்படும் அழுத்தங்கள்- அளவுகோல்

வயதானவரை உடனிருந்து கவனித்து கொள்ளும்போது

1	ஓய்வின்றி, தூங்கும் நேரம் பாதிக்கப்படுகிறது	ஆம்	இல்லை
2	களைப்பால் சோர்வு ஏற்படுகிறது	ஆம்	இல்லை
3	மனம் இறுக்கமாக இருப்பதை போல உணர்கிறேன்	ஆம்	இல்லை
4	தொடர்ச்சியான அழுத்தத்தின் பிடியில் இருப்பதாக உணர்கிறேன்	ஆம்	இல்லை
5	என்னால் சுயமாக முடிவெடுக்க முடியவில்லை	ஆம்	இல்லை
6	என்னால் அன்றாட வாழ்க்கையை மகிழ்ச்சியுடன் களிக்க முடியவில்லை	ஆம்	இல்லை
7	சட்டென்று எரிச்சலும் கோபமும் அடைகிறேன்	ஆம்	இல்லை
8	அவ்வப்போது உணர்ச்சிவசப்படுகிறேன்	ஆம்	இல்லை
9	காரணமின்றி ஒருவித பயமும், பதட்டமும் அடைகிறேன்	ஆம்	இல்லை
10	வாழ்க்கையில் ஒரு பிடிப்பும் இல்லாமல் வாழ்வதாக உணர்கிறேன்	ஆம்	இல்லை

## C) MSPSS

### Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you **Very Strongly Disagree**  
 Circle the "2" if you **Strongly Disagree**  
 Circle the "3" if you **Mildly Disagree**  
 Circle the "4" if you are **Neutral**  
 Circle the "5" if you **Mildly Agree**  
 Circle the "6" if you **Strongly Agree**  
 Circle the "7" if you **Very Strongly Agree**

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
1. There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2. There is a special person with whom I can share joys and sorrows.	1	2	3	4	5	6	7
3. My family really tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help & support I need from my family.	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I can talk about my problems with my family.	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family is willing to help me make decisions.	1	2	3	4	5	6	7
12. I can talk about my problems with my friends.	1	2	3	4	5	6	7



**புறப்படும் சமூக ஆதரவின் பல பரிமாணங்களை அளவிடும் அளவுகோல் - MSPSS**

வ. எண்	புறப்படும் சமூக ஆதரவின் பல பரிமாணங்கள்	மிகக் கடுமையாக மறுக்கிறேன்	கடுமையாக மறுக்கிறேன்	இரளவு மறுக்கிறேன்	கருத்து இல்லை	இரளவு ஒப்புக்கொள்கிறேன்	வருமளவு ஒப்புக் கொள்கிறேன்	முழுமையாக ஒப்புக் கொள்கிறேன்
1.	ஏதேனும் தேவை ஏற்பட்டால் எனக்கென்று ஆதரவாய் ஒருவர் உடன் இருக்கிறார்							
2.	என் சக துணைகளை எனக்கென்று ஆதரவாய் உள்வ ஒருவரிடம் பகிர்ந்து கொள்கிறேன்							
3.	எனது குடும்பத்தார் எனக்கு உதவ உண்மையிலேயே முயற்சி செய்கின்றனர்							
4.	என் குடும்பத்தார் மனதளவில் எனக்கு உதவியும் ஆதரவும் அளிக்கின்றனர்							
5.	எனக்கு உண்மையான ஆறுதலை தர ஒருவர் இருக்கிறார்							
6.	எனது நண்பர்கள்/ தோழிகள் எனக்கு உதவ உண்மையிலேயே முயற்சி செய்கின்றனர்							
7.	எனக்கு ஏதேனும் துன்பம் ஏற்பட்டால் உதவ நண்பர்கள்/ தோழிகள் உள்வனர்							
8.	எனது பிரச்சனைகளை எனது குடும்பத்தாரிடம் பகிர்ந்துகொள்வ முடிகிறது							
9.	எனது சக துணைகளை பகிர்ந்துகொள்வ எனக்கென்று நண்பர்கள்/ தோழிகள் உள்வனர்							
10.	எனது உணர்வுகளை புரிந்துகொள்வ எனக்கென்று ஆதரவாய் ஒருவர் இருக்கின்றார்							
11.	முடிவுகளை எடுப்பதில் என் குடும்பத்தார் எனக்கு உதவ விரும்புகின்றனர்							
12.	எனது பிரச்சனைகளை எனது நண்பர்களிடம் பகிர்ந்துகொள்வ முடிகிறது							

ANNEXURE 4

ETHICAL APPROVAL LETTER

**INSTITUTIONAL ETHICS COMMITTEE  
MADRAS MEDICAL COLLEGE, CHENNAI 600 003**

EC Reg.No.ECR/270/Inst./TN/2013  
Telephone No.044 25305301  
Fax: 011 25363970

**CERTIFICATE OF APPROVAL**

To

Dr.I.Ilavarasan  
I Year PG in MD Community Medicine  
Institute of Community Medicine  
Madras Medical College  
Chennai 600 003

Dear Dr.I.Ilavarasan ,

The Institutional Ethics Committee has considered your request and approved your study titled **"A STUDY ON CAREGIVER STRESS AND SOCIAL SUPPORT PERCEIVED AMONG INFORMAL CAREGIVERS OF ELDERLY PEOPLE "** - **NO.06042017**

The following members of Ethics Committee were present in the meeting hold on **04.04.2017** conducted at Madras Medical College, Chennai 3

- |  |                     |
|--|---------------------|
| 1.Prof.Dr.C.Rajendran, MD.,                                      | :Chairperson        |
| 2.Prof.K.Narayanasamy, MD.,DM.,Dean(FAC), MMC,Ch-3               | :Deputy Chairperson |
| 3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3              | :Member Secretary   |
| 4.Prof.B.Vasanthi,MD., Prof.of Pharmacology.,MMC,Ch-3            | : Member            |
| 5.Prof.K.Ramadevi,MD., Director, Inst. of Bio-Chemistry,MMC,Ch-3 | : Member            |
| 6.Prof.S.Mayilvahanan,MD,Director,Inst. of Int.Med,MMC, Ch-3     | : Member            |
| 7.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3                               | : Lay Person        |
| 8.Thiru S.Govindasamy, BA.,BL,High Court,Chennai                 | : Lawyer            |
| 9.Tmt.Arnold Saulina, MA.,MSW.,                                  | :Social Scientist   |

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary - Ethics Committee  
MEMBER SECRETARY  
INSTITUTIONAL ETHICS COMMITTEE  
MADRAS MEDICAL COLLEGE  
CHENNAI-600 003

# ANNEXURE 5

## PLAGIARISM CERTIFICATE

//C:/Users/ilavarasan/Downloads/Urkund%20Report%20-%202002%20ilavarasan%20main%20pages.docx%20(D42617467).pdf

**URKUND**

### Urkund Analysis Result

**Analysed Document:** 02 ilavarasan main pages.docx (D42617467)  
**Submitted:** 10/16/2018 12:14:00 PM  
**Submitted By:** goodhopedrives@gmail.com  
**Significance:** 2 %

**Sources included in the report:**

<https://www.theseus.fi/handle/10024/82088>  
<https://helda.helsinki.fi/handle/10138/179221>

**Instances where selected sources appear:**

13

Home - URKUND x Home - URKUND x D42617467 - 02 ilavarasan main pag x +

← → ↻ 🏠 <https://secure.orkund.com/view/41642489-323857-725287#DcQxDoAgI> 🔍 Search

🔧 Most Visited 🌐 Getting Started 📰 Latest Headlines

**URKUND** ILAVARASAN. I (goodhopedrives) ▾

**Document:** [02 ilavarasan main pages.docx \(D42617467\)](#)  
**Submitted:** 2018-10-16 15:44 (+05:0-30)  
**Submitted by:** ILAVARASAN. I (goodhopedrives@gmail.com)  
**Receiver:** goodhopedrives.mgrmu@analysis.orkund.com

2% of this approx. 35 pages long document consists of text present in 2 sources.

Rank	Path/Filename
1	<a href="https://www.theseus.fi/handle/10024/82088">https://www.theseus.fi/handle/10024/82088</a>
2	<a href="https://helda.helsinki.fi/handle/10138/179221">https://helda.helsinki.fi/handle/10138/179221</a>

**Alternative sources**  
**Sources not used**

0 Warnings ⏮ Reset 📄 Export 📄 Share ⓘ

**96%** #1 Active ✓

is experienced when life events, chronic life strains, individual self-concepts and coping mechanisms along with the presence or absence of social supports come together to create an environment that challenges the individual's capacity to adapt to role of family caregiver(3).  
Caregiver stress

is highly influenced by numerous factors like gender, earning status, disease conditions and dependency status of care receiving elderly person. For multitude of reasons, caregivers have to rely upon their family members, friends and neighbours who constitute the major sources of social support. But unfortunately there remains a wide gap in understanding between them and caregivers. Most of the time, caregivers may not be in the position of communicating properly their difficulties related to caregiving with the family and friends.

It is obvious that family members and friends are hardly aware about the snags related to caregiving. Earning family members may have misconception that financial support alone will appease the situation. Other members and friends may believe that caregiving task is the sole responsibility of the concerned caregiver. Even if they come forward to render their support, potential areas in caregiving will remain to be hidden ones for them. So our study is aimed primarily to identify those areas and associated factors with in the process of caregiving. Support from family members and friends may be directed towards those influencing factors. Pertaining to that our study is intended to explore the level of social support perceived by caregivers and thereby recommendations to improve the level of social support to be rendered in crucial areas of caregiving can be made.

**External source:** <https://www.theseus.fi/handle/10024/82088> **96%**

is experienced when life events, chronic life strains, individual self-concepts and coping mechanisms along with the presence or absence of social supports come together to create an environment that challenges the individual's capacity to adapt to role of primary caregiver.  
Caregiver stress

Type here to search

ENG IN 15:52 16-10-2018

## ANNEXURE 6

### KEY TO MASTER CHART

VARIABLES	LABEL	CODE
genderCG	Gender of caregiver	1= male 2= female
genderCR	Gender of care recipient	1= male 2= female
eduCG	Education of caregiver	1= up to middle schooling 2= high/high sec/equivalent 3= graduate 4 = illiterate
eduCR	Education of care recipient	1= up to middle schooling 2= high/high sec/equivalent 3= graduate 4 = illiterate
occtypCG	Occupational status of caregiver	1= fulltime 2= part time 3= unemployed 4= retired
occtypCR	Occupational status of care recipient	1= fulltime 2= part time 3= unemployed 4= retired
residCG	Residential status of caregiver	1= living within the same home 2= within walk able distance 3= far away and can be reached by 2 wheeler/bus/others only
marSTS	Marital status	1= married 2= unmarried 3= separated 4= widow(er)
fmlyCOM	Family commitment	1= yes 2= no
relationsh	Relationship with care recipient	1= husband 2= wife 3= child 4= daughter-in-law 5= others
CG - dm	Caregiver – diabetes	1= yes 0= no
- Ht	- hypertension	1= yes 0= no
- cva	- cerebrovascular accident	1= yes 0= no

- jt	- joint problems	1= yes 0= no
- lowmood	- low mood	1= yes 0= no
- memory	- memory related problems	1= yes 0= no
- behaviour	- behavioural problems	1= yes 0= no
- sleep	- sleep disturbances	1= yes 0= no
- sight	- sight related problems	1= yes 0= no
- hearing	- hearing problems	1= yes 0= no
- others	- other health problems	1= yes 0= no
CR – dm	Care recipient - diabetes	1= yes 0= no
- ht	- hypertension	1= yes 0= no
- cva	- cerebrovascular accidents	1= yes 0= no
- jt	- joint problems	1= yes 0= no
- lowmood	- low mood	1= yes 0= no
- memory	- memory related problems	1= yes 0= no
- behaviour	- behavioural problems	1= yes 0= no
- sleep	- sleep disturbances	1= yes 0= no
- sight	- sight related problems	1= yes 0= no
- hearing	- hearing problems	1= yes 0= no
- others	- other health problems	1= yes 0= no
CGS- 1	Having restless, disturbed nights	1= yes 0= no
CGS- 2	Feeling run down and exhausted	1= yes 0= no
CGS- 3	Feeling of tightness or pressure	1= yes 0= no
CGS- 4	Feeling constantly under stress	1= yes 0= no
CGS- 5	Being incapable of making decisions	1= yes 0= no

CGS- 6	Being unable to enjoy day to day life	1= yes 0= no
CGS- 7	Getting irritable and hot tempered	1= yes 0= no
CGS- 8	Feeling nervous	1= yes 0= no
CGS- 9	Getting scared or panicky for no good reason	1= yes 0= no
CGS- 10	Feeling that life is not worth living	1= yes 0= no
SS1	There is a special person who is around when I am in need	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS2	There is a special person with whom I can share joys and sorrows	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS3	My family really tries to help me.	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS4	I get the emotional help & support I need from my family	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS5	I have a special person who is a real source of comfort to me.	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree

SS6	My friends really try to help me	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS7	I can count on my friends when things go wrong.	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS8	I can talk about my problems with my family.	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS9	I have friends with whom I can share my joys and sorrows	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS10	There is a special person in life who cares about my feelings	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS11	My family is willing to help me in make decisions	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree
SS12	I can talk about my problems with my friends	1= very strongly disagree 2= strongly disagree 3= mildly disagree 4= neutral 5= mildly agree 6= strongly agree 7= very strongly agree

***Master chart***



sno	Name	age CG	age CR	gender CG	gender CR	edu CG	edu CR	occtyp CG	occtyp CR	family inc	religion	resid CG	mar STS	fmly COM	relation sh	duration	time spnt	CG-dm	ht	cva	jt	low mood	memory	behaviour	sleep	sight	hearing	others	CR-dm	ht	cva	jt		
1	sundaram	50	68	2	2	2	1	1	2	3000	1	3	4	1	5	14	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2	janani	26	70	2	2	3	4	4	4	10000	1	1	1	1	5	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3	mani	23	66	1	2	1	4	1	4	8000	1	1	2	1	5	5	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
4	radhakrishna	50	65	1	1	1	4	1	1	18000	1	2	1	1	5	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5	banumathi	65	80	2	2	1	2	2	4	2000	1	2	4	1	5	10	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
6	parameswari	33	65	2	2	2	4	4	4	5000	1	1	1	1	5	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7	shanthinandh	23	62	2	2	2	4	4	1	5000	1	1	1	1	4	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
8	viji	25	64	2	1	2	1	4	4	5000	3	1	1	1	4	3	24	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		
9	pushpa	40	80	2	1	2	4	4	4	6000	1	1	1	1	4	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
10	chandra	32	63	2	2	2	4	4	4	5000	1	1	1	1	4	9	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1		
11	pushpa	48	80	2	2	1	4	4	4	4500	1	1	1	1	4	1	24	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0		
12	buvaneswari	25	66	2	1	4	4	4	2	5000	1	1	1	1	4	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
13	saleema	29	63	2	2	1	4	4	4	4000	2	1	1	1	4	10	24	0	0	1	0	0	0	0	0	0	0	0	1	1	0	1		
14	kalaivani	26	65	2	1	3	4	4	2	5000	1	1	2	1	4	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
15	anitha	32	68	2	2	2	2	4	4	10000	1	1	1	1	4	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
16	selvarani	29	62	2	2	3	4	1	4	10000	1	1	1	1	4	6	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0		
17	suriyaa	30	65	2	2	2	1	4	3	10000	1	2	1	1	4	3	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1		
18	manonmani	23	65	2	2	2	4	1	4	10000	1	1	1	1	4	5	8	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0		
19	divya	26	60	2	2	2	1	4	4	10000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1		
20	saranya	31	75	2	2	2	4	4	4	10000	1	1	1	1	4	1	24	0	1	0	0	1	0	1	1	0	0	0	1	1	0	0		
21	abirami	24	65	2	1	3	2	4	4	10000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	ragini	25	60	2	2	2	1	4	4	10000	1	1	1	1	4	1	24	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1		
23	pushpaavalli	20	60	2	1	2	2	1	2	5000	1	1	1	1	4	3	12	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		
24	shantheen	20	60	2	2	1	1	4	4	4000	2	2	1	1	4	1	16	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1		
25	nirmala	29	60	2	2	3	1	4	4	15000	1	1	1	1	4	6	24	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
26	vedavalli	27	68	2	1	2	4	4	1	10000	1	1	1	1	4	2	9	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1		
27	kalaivani	27	60	2	1	2	2	4	4	15000	1	1	1	1	4	4	24	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0		
28	devi	29	60	2	1	3	2	4	2	10000	1	2	1	1	4	4	12	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0		
29	banupriya	26	64	2	1	3	2	1	2	29000	1	1	1	1	4	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	selvi	26	60	2	1	4	4	2	2	15000	1	1	1	1	4	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	chitra	21	60	2	1	2	2	4	1	1000	1	1	1	1	4	3	8	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0		
32	nagammal	19	60	2	2	2	4	1	4	16000	1	2	1	1	4	1	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1		
33	lakshmi	28	65	2	1	1	1	2	2	3000	1	1	1	1	4	8	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
34	mythili	23	61	2	2	2	4	1	2	3500	1	1	1	1	4	2	12	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	
35	sathya	28	76	2	1	2	2	2	4	10000	1	1	2	1	4	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36	neelavathi	29	67	2	1	2	1	1	2	4000	1	1	1	1	4	5	12	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
37	madasamy	65	60	1	1	4	4	2	4	2000	1	2	1	1	4	5	12	1	1	0	0	0	1	0	0	0	0	1	1	1	0	1		
38	mohana	40	65	2	2	1	4	4	4	4000	1	1	1	1	4	2	24	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1		
39	saravanan	35	65	1	2	1	4	1	4	5000	1	1	1	1	4	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
40	gowri	30	65	1	1	1	1	4	4	2000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
41	vijayalakshmi	32	60	2	2	1	4	4	4	5000	1	1	1	1	4	5	24	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1		
42	lakshmi	30	60	2	2	2	4	4	4	3000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
43	uma	43	70	2	2	1	4	4	4	5000	1	1	1	1	4	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
44	mangaiyarkar	24	54	2	1	2	3	4	1	5000	1	1	2	1	4	4	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
45	deivanai	37	59	2	2	3	1	4	4	10000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
46	gangadevi	24	60	2	1	3	1	4	1	4000	1	1	1	1	4	5	12	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
47	radhamani	38	65	2	1	1	4	2	2	10000	1	1	1	1	4	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	revathy	23	63	2	1	3	4	1	2	5000	1	1	1	1	4	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
49	kavitha	27	60	2	2	4	4	2	4	5000	1	2	1	1	4	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
50	meena	23	60	2	2	2	3	2	2	4000	1	2	1	1	4	1	16	0	0	0	0	0	0	1	0	0	0	0	1	1	0	1		
51	revathi	32	65	2	1	2	2	2	2	10000	1	1	2	1	4	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	sachana	30	60	2	1	1	1	2	2	4000	1	2	1	1	4	5	12	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
53	durga	30	60	2	1	1	1	2	2	5000	3	1	1	1	4	3	24	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
54	sathya	23	60	2	1	3	1	4	1	5000	1	1	1	1	4	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
55	suseela	65	87	2	1	1	2	4	1	29000	1	1	1	1	4	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	umamheshwari	42	73	2	1	4	4	4	1	15000	1	1	1	1	4	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	abirami	26	60	2																														

sno	Name	age CG	age CR	gender CG	gender CR	edu CG	edu CR	occtyp CG	occtyp CR	family inc	religion	resid CG	mar STS	fmly COM	relation sh	duration	time spnt	CG-dm	ht	cva	jt	low mood	memory	behaviour	sleep	sight	hearing	others	CR-dm	ht	cva	jt				
61	usha	37	60	2	2	1	4	2	4	3000	1	1	1	1	3	1	24	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1				
62	sulochana	50	80	2	2	4	4	4	4	5000	1	1	4	0	3	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
63	kasilingam	32	65	1	2	2	1	1	4	10000	1	1	4	1	3	10	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1				
64	devikala	30	65	2	2	2	1	4	4	5000	1	1	1	1	3	1	24	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1				
65	banumathi	41	80	2	2	2	4	1	4	5000	1	1	1	1	3	5	24	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0				
66	shakeela	36	60	2	2	1	4	4	4	5000	2	1	4	1	3	7	24	0	1	0	1	1	0	1	1	0	0	0	1	0	0	1				
67	lakshmi	42	86	2	2	1	1	4	4	15000	1	1	3	1	3	10	24	0	1	0	0	1	0	1	0	0	0	0	0	0	0	1				
68	renukadevi	49	74	2	2	2	1	1	1	3000	1	1	3	2	3	15	24	0	0	0	1	1	0	0	1	0	0	0	0	1	0	1				
69	fathima	48	65	2	1	2	4	4	4	20000	2	2	1	1	3	12	24	0	0	0	1	1	0	1	1	0	0	0	0	0	0	1				
70	saranya	62	86	2	2	4	4	4	4	10000	1	1	4	1	3	5	24	0	0	0	1	1	0	1	0	0	0	0	0	0	0	1				
71	megala	38	90	2	1	4	4	4	4	10000	1	2	1	1	3	1	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1			
72	parthasarathi	58	76	1	2	1	4	2	4	2000	1	1	1	2	3	2	10	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0				
73	mathina	30	68	2	2	2	1	4	4	10000	2	2	1	1	3	4	24	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1				
74	saravanan	40	70	1	1	3	1	1	3	12000	1	2	1	1	3	1	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1			
75	geetha	40	70	2	2	2	1	2	4	5000	1	1	1	1	3	15	16	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1				
76	thiyagarajan	31	63	1	1	1	1	1	4	7500	1	1	1	1	3	10	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1			
77	mohanapriya	29	60	2	2	3	4	1	4	15000	1	1	1	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
78	kasthuri	25	60	2	2	1	4	4	1	10000	1	3	1	1	3	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
79	dhanabalan	31	60	1	1	3	4	1	2	9000	1	1	2	2	3	2	10	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1			
80	prabu	31	60	1	2	3	2	1	2	15000	1	1	1	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
81	laxmanan	29	65	1	1	2	1	1	4	10000	1	1	1	1	3	2	12	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1			
82	prakash	35	60	1	2	1	4	1	4	5000	1	1	1	2	3	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
83	devaraj	35	60	1	2	4	4	1	4	6000	1	1	1	1	3	10	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1			
84	maheswari	50	70	2	2	4	4	1	4	5000	1	1	3	2	3	10	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
85	shanthi	40	60	2	2	4	4	2	4	2000	1	1	3	1	3	5	12	1	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0		
86	saravanan	31	78	1	2	1	4	1	4	8000	1	1	1	1	3	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
87	saroja	30	62	2	2	2	4	2	4	7000	1	1	3	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1			
88	murugan	36	66	1	2	1	4	1	4	6000	1	1	1	1	3	5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
89	shanmugam	27	64	1	1	2	4	1	2	8000	1	1	1	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
90	maheswari	50	70	2	2	4	4	1	4	2000	1	1	3	1	3	4	12	0	0	0	1	1	0	1	1	0	1	0	0	0	0	0	0	1		
91	shanthi	47	65	2	2	4	4	4	4	2000	1	1	3	2	3	2	24	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1		
92	jaganathan	41	72	1	1	1	4	1	4	4000	1	1	1	1	3	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
93	madeswaran	40	75	1	2	2	1	1	4	4000	1	1	1	1	3	5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
94	vannamayilraj	26	65	1	1	2	2	1	4	8000	1	1	1	1	3	2	12	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1		
95	lalitha	40	69	2	2	1	4	4	4	6000	1	1	4	1	3	2	24	0	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0		
96	munivel	35	62	1	2	2	4	1	4	5000	1	1	2	2	3	1	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1		
97	selvamalar	40	75	2	2	2	4	4	4	10000	3	2	2	1	3	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
98	sekar	40	60	1	2	1	4	2	4	4000	1	1	4	1	3	5	12	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1		
99	suresh	40	60	1	2	1	1	2	4	4000	1	1	4	2	3	2	12	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0		
100	jothi	34	60	2	2	1	1	4	4	35000	1	1	1	1	3	6	24	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
101	varalaxmi	50	75	2	2	1	1	4	4	4000	1	1	1	1	3	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
102	fathima	60	75	2	2	2	1	4	4	10000	2	1	3	1	3	5	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	
103	tirupathy	48	88	1	2	2	4	1	4	8000	1	3	1	1	3	3	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1		
104	amudhavalli	35	65	2	2	2	4	1	4	5000	1	1	3	3	3	10	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
105	kasthuri	50	85	2	2	4	4	1	4	10000	1	1	4	1	3	10	24	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	
106	chandra	39	70	2	2	4	2	4	4	8000	1	1	1	1	3	7	24	0	0	1	1	0	0	0	1	0	0	1	0	1	0	1	0	1		
107	shanthi	64	54	2	1	2	2	2	2	5000	1	1	1	1	3	1	24	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	
108	sangeetha	36	52	2	2	1	4	2	4	15000	1	2	1	1	3	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
109	kathirvel	32	58	1	2	1	1	1	4	6000	1	1	1	1	3	10	8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1		
110	lingappan	34	60	1	1	2	4	2	2	5000	1	1	2	2	3	1	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
111	kaamila	23	62	2	1	1	1	4	4	4000	2	1	1	1	3	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	shankar	35	67	1	2	4	4	2	4	10000	1	1	4	1	3	10	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
113	ravi	42	70	1	2	2	4	2	4	2000	1	2	1	2	3	2	10	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	
114	deepa	27	69	2	2	2	1	4	2	10000	1	3	1	1	3	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	palaniammal	40	70	2	2																															

sno	Name	age CG	age CR	gender CG	gender CR	edu CG	edu CR	occtyp CG	occtyp CR	family inc	religion	resid CG	mar STS	fmly COM	relation sh	duration	time spnt	CG-dm	ht	cva	jt	low mood	memory	behaviour	sleep	sight	hearing	others	CR-dm	ht	cva	jt	
121	moorthy	31	50	1	2	2	4	1	2	4000	1	1	1	1	3	5	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
122	mohanraj	32	60	1	2	2	2	1	2	4000	1	1	1	1	3	6	24	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
123	thangavel	35	65	1	2	2	1	1	2	6000	1	1	1	1	3	16	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
124	janaki	29	63	2	2	2	1	4	2	10000	1	1	1	1	3	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
125	dhanushkodi	20	60	2	2	3	4	1	4	5000	1	1	2	1	3	1	12	0	0	0	0	0	0	0	0	0	0	1	0	0	1		
126	indra	49	61	2	1	2	4	4	4	5000	1	1	1	0	2	4	24	0	1	0	1	0	0	0	0	0	0	0	0	0	0		
127	veeramma	52	62	2	1	4	1	4	3	10000	1	1	1	0	2	10	12	1	0	0	1	0	0	0	0	0	0	0	0	0	0		
128	saroja	56	70	2	1	4	2	4	4	3000	1	1	1	1	2	5	24	1	1	0	1	0	1	1	0	0	0	1	1	0	1		
129	padmavathi	60	76	2	1	1	1	1	4	10000	1	1	1	1	2	7	24	0	0	0	1	1	0	0	0	0	0	0	0	0	0		
130	malika	60	68	2	1	4	4	4	4	10000	1	1	1	1	2	10	24	0	0	0	1	0	0	0	0	0	0	0	0	0	1		
131	dhanalakshmi	58	68	2	1	2	2	4	3	4800	1	1	1	2	2	1	24	1	1	0	1	0	0	1	0	0	0	0	0	0	1		
132	lakshmi	52	60	2	1	4	1	4	1	5000	1	1	1	2	2	5	8	0	0	0	1	1	0	0	0	0	0	0	0	0	1		
133	vijaya	48	60	2	1	1	1	1	4	7000	1	1	1	1	2	7	16	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	
134	indrani	53	65	2	1	4	1	4	4	13000	1	1	1	2	2	5	24	0	0	0	1	0	0	1	0	0	0	0	0	0	0		
135	thulasi	64	68	2	1	1	2	4	2	2000	1	1	1	2	2	5	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
136	geetha	46	63	2	1	2	2	4	1	5000	1	1	1	1	2	10	24	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	
137	muthulaxmi	50	61	2	1	1	2	4	1	10000	1	1	1	1	2	10	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
138	palaniammal	60	65	2	1	4	1	4	2	8000	1	1	1	2	2	1	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
139	kamala	55	61	2	1	4	4	2	2	4000	1	1	1	2	2	1	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
140	vasantha	65	76	2	1	4	1	4	4	2000	1	1	1	1	2	6	24	1	1	0	0	0	1	1	0	0	0	1	0	0	0	0	
141	soundamma	58	65	2	1	4	4	4	4	1000	1	1	1	2	2	4	24	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0	
142	menaka	60	65	2	1	4	1	4	2	8000	1	1	1	2	2	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
143	pachaiammal	68	78	2	1	4	4	4	4	2000	1	1	1	2	2	5	24	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	
144	pachaiammal	63	67	2	1	1	1	4	4	2000	1	1	1	2	2	6	24	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	
145	valliammal	61	64	2	1	4	1	2	2	2000	1	1	1	2	2	5	8	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	
146	jayalaxmi	64	69	2	1	1	1	4	1	4000	1	1	1	2	2	5	12	0	0	0	1	0	0	1	0	0	0	1	1	1	0	1	
147	vijayalakshmi	68	80	2	1	4	1	2	4	4000	1	1	1	2	2	5	8	1	0	0	1	1	0	0	0	1	0	0	0	1	0	0	
148	saroja	53	60	2	1	4	1	2	4	2000	1	1	1	2	2	5	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
149	gokulaxmi	58	62	2	1	4	1	4	2	8000	1	1	1	1	2	5	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
150	mariammal	70	80	2	1	4	1	4	4	2000	1	1	1	2	2	2	16	0	0	0	1	1	0	0	1	0	0	0	1	1	0	1	
151	lakshmi	70	87	2	1	1	1	4	4	4000	3	1	1	2	2	10	24	0	1	0	1	0	0	0	0	0	0	0	1	1	0	1	
152	bakyam	61	67	2	1	1	2	4	4	2000	1	1	1	2	2	6	24	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	
153	rajam	61	70	2	1	2	1	4	1	5000	1	1	1	2	2	3	12	1	0	0	1	1	0	0	1	0	0	0	0	0	0	1	
154	muniyal	65	75	2	1	4	4	4	4	2000	1	1	2	2	2	2	24	0	0	0	1	0	0	1	1	0	0	0	1	1	0	0	
155	susheela	64	68	2	1	2	2	4	4	2000	1	1	1	1	2	4	24	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	
156	samundeswari	58	65	2	1	2	2	4	1	10000	1	1	1	2	2	4	12	0	0	0	1	0	0	0	0	0	0	1	0	1	0	1	
157	mary	54	64	2	1	2	2	4	2	8000	3	1	1	2	2	2	8	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	
158	sumathi	61	63	2	1	2	2	4	1	6000	1	1	1	1	2	5	12	1	0	0	1	0	0	1	1	0	0	0	1	0	0	1	
159	charlesmary	48	62	2	1	2	2	4	3	10000	3	1	1	1	2	2	24	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
160	ammu	46	60	2	1	1	4	4	3	5000	1	1	1	2	2	1	24	1	0	0	0	0	0	0	1	0	0	0	1	0	0	1	
161	malika	62	65	2	1	1	2	4	2	5000	1	1	1	2	2	1	8	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	
162	padma	49	60	2	1	4	1	2	2	5000	1	1	1	1	2	10	16	0	0	0	1	1	1	1	1	0	0	1	0	0	0	0	
163	sasikala	62	68	2	1	1	1	4	4	1000	1	1	1	1	2	1	16	0	0	0	1	0	0	0	1	1	0	1	1	0	0	0	
164	chandra	60	65	2	1	4	1	4	2	6000	1	1	1	1	2	2	12	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	
165	arasi	54	61	2	1	2	2	4	3	5000	1	1	1	2	2	3	24	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	
166	sakunthala	51	62	1	2	2	1	2	4	3000	1	1	1	2	2	5	16	0	1	0	1	0	0	1	1	1	0	0	0	1	1	0	1
167	devika	53	68	2	1	1	1	4	4	4000	1	1	1	2	2	5	24	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1
168	angamuthu	66	80	2	1	4	4	4	4	4800	1	1	1	2	2	1	24	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	1
169	govindamani	74	78	2	1	4	1	4	4	2000	1	1	1	2	2	5	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
170	parvatham	63	75	2	1	2	4	4	4	8000	1	1	1	2	2	1	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
171	kalavathy	48	62	2	2	4	4	4	4	2000	1	1	1	2	2	5	12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
172	saroja	62	65	2	1	1	1	2	4	4000	1	1	1	2	2	1	12	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
173	papaathi	65	70	2	1	4	1	4	4	2000	1	1	1	1	2	6	24	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
174	sampoarana	53	62	2	1	1	1	7	4	5000	1	1	1	2	1	3	12	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
175	subramani	64	62	1	2	4	1	4	2	4000	1	1	1	2	1	4	12	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
176	narasimhan	60	53	1	2	4	1	1	4	4000	1	1	2	2	1	3	12	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1
177	rasathi	57	70	2	1	4	1	4	4	6000	1	1	1	1	1	7	10	0	0	0	1	0											

sno	Name	low mood	memory	behaviour	sleep	sight	hearing	others	Cradl Score	CGS-1	CGS-2	CGS-3	CGS-4	CGS-5	CGS-6	CGS-7	CGS-8	CGS-9	CGS-10	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	number CR	
1	sundaram	0	0	0	0	0	0	0	95	0	0	0	0	1	0	0	0	0	0	6	5	6	5	6	6	6	6	5	5	6	6	1	
2	janani	0	0	1	0	0	0	0	80	0	0	0	0	1	0	0	1	0	0	7	7	6	6	6	5	5	5	7	6	6	6	1	
3	mani	0	0	0	1	0	0	0	65	0	0	1	0	0	1	1	1	1	1	2	1	1	1	1	1	1	2	2	1	2	2	2	
4	radhakrishna	0	0	1	0	0	0	0	90	0	0	0	0	0	0	1	1	0	1	1	2	6	6	2	1	1	6	1	1	1	1	1	
5	banumathi	0	0	0	0	0	0	0	80	0	0	0	0	0	0	1	1	0	0	6	6	5	5	6	1	1	5	5	5	5	5	1	
6	parameswari	0	0	1	0	1	0	0	80	0	0	0	0	1	0	0	0	0	0	6	6	6	5	6	1	1	5	6	6	1	1	1	
7	shanthinandh	0	0	1	1	0	0	0	85	1	0	0	1	1	0	0	0	0	1	5	2	3	5	5	1	3	3	3	1	1	5	1	
8	viji	1	1	1	0	0	0	0	10	1	1	0	1	1	0	0	0	0	1	6	6	1	1	6	1	1	6	1	6	2	1	1	
9	pushpa	0	1	1	0	0	1	0	70	0	0	0	0	1	0	1	1	0	1	5	2	5	5	2	1	1	5	1	5	5	1	1	
10	chandra	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	1	0	0	5	6	6	6	6	1	1	6	1	6	6	6	1	
11	pushpa	0	1	1	0	0	0	0	75	1	1	1	1	1	1	1	1	0	1	1	1	1	2	5	5	1	2	1	1	2	2	1	
12	buvaneswari	0	0	0	0	0	0	0	90	0	0	0	0	1	0	1	1	0	0	6	6	6	6	6	1	1	6	1	6	6	1	2	
13	saleema	0	0	1	0	0	0	0	80	0	0	0	0	1	0	1	1	0	0	5	6	6	6	5	1	1	5	1	6	5	1	1	
14	kalaivani	0	1	1	0	0	0	0	90	0	0	3	0	0	0	1	1	0	0	7	7	7	7	6	5	5	5	5	6	6	5	2	
15	anitha	0	0	1	0	0	0	0	90	0	0	1	0	0	1	1	1	0	1	3	5	1	5	5	1	4	1	5	1	4	4	1	
16	selvarani	1	1	1	1	0	0	0	90	0	0	1	1	1	0	0	1	0	0	7	6	5	5	5	5	6	5	5	5	5	5	1	
17	suriyaa	0	0	0	0	0	0	0	95	0	0	0	0	0	0	0	1	0	0	7	7	7	7	7	7	4	4	7	7	7	7	1	
18	manonmani	1	0	1	0	0	0	0	100	0	0	0	0	0	0	1	1	0	0	6	7	7	7	6	7	7	7	7	7	7	7	1	
19	divya	0	0	0	0	0	0	0	95	0	0	0	0	0	0	0	1	0	0	7	7	7	7	7	7	7	7	7	7	7	7	1	
20	saranya	0	0	1	0	1	0	0	60	0	1	1	1	0	1	1	0	1	1	6	6	1	1	6	1	1	1	1	6	1	1	1	
21	abirami	0	0	0	0	0	0	0	75	0	0	0	0	1	0	0	1	0	0	7	7	6	7	7	4	4	6	4	6	7	4	2	
22	ragini	0	0	1	1	0	0	0	75	0	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4	4	4	4	4	4	4	1	
23	pushpaavalli	1	0	1	0	0	0	0	80	0	0	0	0	0	0	0	1	0	0	4	3	3	3	3	7	7	4	4	3	3	3	2	
24	shantheen	1	1	1	0	0	0	0	80	0	0	3	0	1	0	1	1	1	1	1	1	1	1	1	1	7	1	1	1	7	1	1	1
25	nirmala	0	0	1	0	0	0	0	75	0	0	0	0	0	0	1	0	0	0	1	4	6	1	1	1	1	6	6	1	4	6	1	
26	vedavalli	1	0	1	0	0	0	1	80	0	2	3	0	0	1	1	1	0	0	7	4	7	7	7	2	5	2	5	7	7	4	2	
27	kalaivani	0	0	0	0	0	0	0	85	0	0	0	0	1	1	1	1	0	4	4	1	1	1	1	1	1	1	1	1	1	1	1	
28	devi	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	7	7	7	7	7	7	7	7	7	7	7	7	2	
29	banupriya	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	1	1	0	7	6	7	7	7	6	7	7	7	7	7	7	2	
30	selvi	0	0	0	0	0	0	0	80	0	0	0	0	5	0	1	0	0	0	6	6	2	2	6	2	2	2	2	2	2	2	1	
31	chitra	1	0	0	0	0	0	0	85	0	2	0	0	0	0	1	0	0	0	7	6	2	2	6	2	2	2	2	6	2	2	2	
32	nagammal	1	1	1	0	0	0	1	80	0	0	0	0	0	0	1	1	0	0	6	6	3	2	6	3	2	2	3	6	3	3	1	
33	lakshmi	0	0	0	0	0	0	0	85	0	0	0	0	1	0	0	0	1	0	6	6	2	2	7	2	3	2	2	6	3	3	1	
34	mythili	0	0	0	0	0	0	0	80	0	1	0	0	0	1	1	0	1	1	3	3	1	1	3	3	2	2	3	2	2	3	1	
35	sathya	0	0	0	0	0	1	0	70	0	1	0	0	1	0	1	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	
36	neelavathi	1	0	1	1	0	0	0	70	0	0	0	0	1	0	0	0	0	0	6	6	6	6	5	6	6	6	5	6	5	6	2	
37	madasamy	0	0	0	0	0	0	0	100	0	0	0	1	1	1	1	0	0	0	6	5	2	2	5	2	2	2	2	5	2	2	2	
38	mohana	0	0	1	1	0	0	0	80	1	1	0	0	1	0	1	1	0	0	4	4	3	3	3	3	3	3	3	3	3	3	1	
39	saravanan	0	0	1	0	0	0	0	100	1	1	1	1	0	1	1	1	1	1	3	3	2	4	3	2	1	1	2	3	2	2	2	
40	govri	0	0	1	0	1	0	0	75	1	1	1	1	0	1	1	1	1	1	6	5	2	2	5	1	2	2	2	4	2	2	1	
41	vijayalakshmi	0	0	1	1	0	0	0	85	0	0	0	0	1	0	1	0	1	0	6	6	2	2	6	1	1	2	1	6	2	1	1	
42	lakshmi	0	1	1	1	1	0	1	85	0	0	0	0	1	0	0	0	1	1	5	5	2	2	6	2	3	3	2	6	2	2	1	
43	uma	0	0	1	1	0	0	0	85	1	0	0	1	1	0	0	0	1	5	2	3	5	5	1	3	3	3	1	1	5	1	1	
44	mangaiyarkar	0	1	1	0	0	0	0	90	0	0	3	0	0	0	1	1	0	0	7	7	7	7	6	5	5	5	6	6	5	1	1	
45	deivanai	0	0	0	0	0	0	0	95	0	0	0	0	0	0	0	1	0	0	7	7	7	7	7	7	7	7	7	7	7	7	1	
46	gangadevi	1	0	1	1	0	0	0	70	0	0	0	0	1	0	0	0	0	0	6	6	6	6	5	6	6	6	5	6	5	6	2	
47	radhamani	0	0	0	0	0	0	0	75	0	0	0	0	1	0	0	1	0	0	7	7	6	7	7	4	4	6	4	6	7	4	2	
48	revathy	0	0	0	0	0	0	0	90	0	0	0	0	1	0	1	1	0	0	6	6	6	6	6	1	1	6	1	6	6	1	2	
49	kavitha	1	1	0	1	0	0	0	85	1	1	0	0	0	0	1	1	1	0	6	6	6	6	6	1	1	6	1	6	6	1	1	
50	meena	1	1	1	0	0	0	0	80	0	0	3	0	1	0	1	1	1	1	1	1	1	1	1	7	1	1	1	7	1	1	1	
51	revathi	0	0	0	0	0	1	0	70	0	1	0	0	1	0	1	1	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	
52	sachana	1	0	1	1	0	0	0	70	0	0	0	0	1	0	0	0	0	0	6	6	6	6	5	6	6	6	5	6	5	6	1	
53	durga	1	1	1	0	0	0	0	10	1	1	0	1	1	0	0	0	0	1	6	6	1	1	6	1	1	6	1	6	2	1	1	
54	sathya	1	0	1	0	0	0	0	80	0	0	0	0	0	0	0	1	0	0	4	3	3	3	3	7	7	4	4	3	3	3	1	
55	suseela	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	1	1	0	7	6	7	7	7	6	7	7	7	7	7	7	1	
56	umamheswari	0	0	0	0	0	0	0	80	0	0	0	0	5	0	1	0	0	0	6	6	2	2	6	2	2	2	2	6	2	2	1	
57	abirami	0	1	1	0	0	1	0	70	0	0	0	0	1	0	1	1	0	1	5	2	5	5	2	1	1	5	1	5	5	1	1	
58	salma	1	1	0	1	0	0	0	85	1	1	0	0	0	0	1	1	1	0	6	6	6	6	6	1	1	6	1	6	6	1	1	
59	kanjana	1	0	1	0	0	0	0	75																								

sno	Name	low mood	memory	behaviour	sleep	sight	hearing	others	Cradi Score	CGS-1	CGS-2	CGS-3	CGS-4	CGS-5	CGS-6	CGS-7	CGS-8	CGS-9	CGS-10	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	number CR	
61	usha	1	1	1	1	0	0	0	90	0	0	0	0	0	0	1	1	0	0	7	7	1	1	7	7	7	7	7	7	5	7	1	
62	sulochana	1	0	1	0	1	0	0	65	0	1	0	0	0	0	0	0	0	0	1	1	1	1	5	5	5	6	6	7	7	6	1	
63	kasilingam	1	1	0	0	0	0	0	95	0	0	0	0	0	0	1	0	0	0	7	7	7	7	7	7	7	7	7	7	7	1		
64	devikala	1	0	1	1	0	0	0	90	0	1	1	0	0	0	1	1	0	1	7	7	7	7	7	7	7	7	7	7	7	1		
65	banumathi	1	1	1	1	1	0	0	90	0	0	0	0	0	0	1	0	0	0	7	1	1	1	7	5	5	1	1	1	1	1		
66	shakeela	1	0	1	1	0	0	0	85	0	1	0	0	1	0	0	0	1	1	1	5	5	1	1	1	1	5	1	1	4	1		
67	lakshmi	0	0	1	0	0	0	0	60	0	0	0	0	0	0	1	1	1	1	6	6	1	1	6	1	6	2	2	6	6	2		
68	renukadevi	0	0	0	0	1	0	0	70	0	1	0	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1		
69	fathima	1	0	1	1	0	0	0	65	0	0	0	0	0	0	1	0	1	1	7	7	1	1	7	1	2	7	5	7	1	5		
70	saranya	1	0	0	0	0	0	0	70	1	1	0	1	0	0	1	1	0	1	2	2	2	2	2	2	2	2	5	2	2	2		
71	megala	1	0	1	0	1	0	0	65	0	1	1	1	0	0	1	1	0	0	7	7	1	1	6	1	1	6	3	3	1	5		
72	parthasarathi	0	0	0	0	1	0	0	75	1	1	1	1	1	0	1	1	0	1	2	2	6	2	2	2	2	2	2	3	2	2		
73	mathina	1	0	0	1	0	0	0	80	0	0	0	0	0	0	1	0	0	0	7	7	6	6	6	2	2	6	2	6	6	5		
74	saravanan	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	3	4	5	5	4	5	4	5	5	4	4	2		
75	geetha	1	1	1	0	0	0	0	85	1	0	1	0	1	0	1	1	1	0	2	2	2	5	2	1	1	2	1	1	1	5		
76	thiyagarajan	1	0	0	0	1	0	0	85	0	1	0	1	0	0	0	1	0	1	7	7	7	7	7	7	7	7	7	7	7	2		
77	mohanapriya	0	0	0	0	0	0	1	80	0	0	0	0	1	1	1	0	0	1	7	6	6	7	7	6	7	6	7	7	7	2		
78	kasthuri	0	0	1	0	0	0	0	80	0	1	0	0	0	0	0	0	1	0	4	7	6	7	7	7	4	4	7	7	7	4	2	
79	dhanabalan	0	1	1	0	1	0	0	75	1	1	0	0	0	1	0	1	0	1	7	6	2	2	6	6	6	6	6	6	3	6	2	
80	prabu	0	0	0	0	0	0	1	85	0	0	0	0	0	0	1	0	0	0	7	7	1	1	6	2	2	1	2	7	1	2	1	
81	laxmanan	0	0	0	0	1	0	0	85	0	0	0	0	1	0	1	1	0	0	7	6	1	2	6	1	2	2	2	6	1	1	1	
82	prakash	0	0	1	0	0	0	0	80	0	0	0	0	1	0	0	1	0	0	6	7	3	2	6	2	3	3	2	6	3	3	1	
83	devaraj	1	1	1	1	1	1	0	80	0	0	0	0	0	0	0	1	0	0	6	6	5	5	5	5	4	4	5	6	5	5	1	
84	maheswari	1	1	0	1	0	0	0	60	0	0	1	1	0	0	1	1	1	1	2	1	2	1	2	2	1	1	1	1	1	1	1	
85	shanthi	1	1	1	1	1	1	0	70	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	
86	saravanan	0	0	0	1	0	0	0	80	0	0	0	0	0	0	1	1	0	0	5	5	5	5	5	6	5	5	6	6	6	6	1	
87	saroja	0	1	0	1	0	0	1	70	1	1	1	1	0	1	1	1	1	1	2	2	1	1	2	1	1	2	2	2	2	2	1	
88	murugan	1	0	0	0	0	0	0	75	0	0	0	0	0	0	1	1	0	0	6	6	1	2	6	1	2	1	1	6	1	1	1	
89	shanmugam	0	0	0	0	0	0	1	75	0	0	0	0	0	1	0	1	0	1	6	6	2	2	6	6	6	3	6	7	2	6	1	
90	maheswari	1	0	0	0	0	0	0	75	1	1	1	1	0	1	1	1	1	1	6	6	1	1	4	1	1	1	1	1	4	2	2	1
91	shanthi	0	0	1	0	0	0	0	55	0	0	1	1	0	0	1	1	1	0	3	2	2	2	2	2	3	3	2	2	2	2	1	
92	jaganathan	0	0	0	0	0	0	0	80	0	0	0	0	1	0	0	0	0	0	6	6	6	7	7	6	7	6	6	6	6	6	2	
93	madeswaran	0	0	1	0	0	0	0	60	0	0	0	0	0	0	0	1	0	0	6	7	6	7	6	6	6	6	6	6	6	7	1	
94	vannamayilraj	1	0	0	0	0	0	0	65	0	0	1	1	0	1	1	1	1	1	5	5	2	1	5	2	1	2	2	5	2	2	2	
95	lalitha	0	0	1	0	0	0	0	65	0	0	0	0	0	0	0	1	0	0	1	1	6	6	1	5	5	5	5	1	5	5	1	
96	munivel	0	0	0	0	0	0	0	100	0	0	0	0	0	0	1	1	0	1	5	5	5	5	6	3	4	5	3	5	5	4	1	
97	selvamalar	0	0	0	0	0	0	0	95	0	0	0	0	1	0	0	0	0	0	6	5	6	5	6	6	6	5	5	6	6	6	1	
98	sekar	0	0	1	0	0	0	1	95	0	0	1	1	0	1	1	1	1	1	3	3	3	2	2	1	2	2	2	2	2	2	1	
99	suresh	0	0	1	1	0	0	0	95	0	0	0	0	1	0	1	0	0	0	5	5	2	2	6	2	3	2	2	6	3	3	1	
100	jothi	0	0	0	1	0	0	0	100	0	0	0	0	1	0	0	0	0	0	5	5	3	3	5	2	3	3	3	6	2	3	1	
101	varalaxmi	0	0	0	0	0	0	0	95	0	0	0	0	1	0	0	0	0	0	5	5	3	3	6	3	3	2	2	5	3	3	1	
102	fathima	0	1	1	1	1	0	0	60	1	1	0	0	1	1	1	1	0	0	4	2	2	2	3	1	1	1	3	1	2	2	1	
103	tirupathy	0	1	1	1	0	0	0	65	0	0	0	0	0	0	0	1	0	0	6	6	2	2	6	2	2	2	1	6	2	1	1	
104	amudhavalli	0	1	1	1	0	0	0	70	1	1	1	1	0	0	1	1	1	1	3	3	1	1	3	1	1	1	1	3	1	1	1	
105	kasthuri	0	1	0	0	1	0	0	85	0	0	1	0	0	1	1	0	1	1	5	5	1	1	5	1	1	1	1	5	1	1	1	
106	chandra	1	1	1	1	0	0	1	10	1	1	1	1	1	1	1	1	1	1	2	2	1	1	2	1	1	1	1	2	1	1	1	
107	shanthi	0	1	1	0	0	0	0	95	0	0	0	0	0	1	1	0	0	0	5	5	3	5	5	2	3	3	2	2	2	2	2	
108	sangeetha	0	0	0	0	0	0	1	80	0	0	0	0	1	1	1	0	0	1	7	6	6	7	7	6	7	6	7	7	7	7	1	
109	kathirvel	1	1	1	1	1	1	0	80	0	0	0	0	0	0	0	1	0	0	6	6	5	5	5	5	4	4	5	6	5	5	1	
110	lingappan	0	0	0	0	0	0	0	100	0	0	0	0	0	0	1	1	0	1	5	5	5	5	6	3	4	5	3	5	5	4	1	
111	kaamila	0	0	0	0	0	0	0	95	0	0	0	0	1	0	0	0	0	0	5	5	3	3	6	3	3	2	2	5	3	3	1	
112	shankar	1	1	0	0	0	0	0	95	0	0	0	0	0	0	0	1	0	0	7	7	7	7	7	7	7	7	7	7	7	7	1	
113	ravi	0	0	0	0	1	0	0	75	1	1	1	1	1	0	1	1	0	1	2	2	6	2	2	2	2	2	2	3	2	2	1	
114	deepa	0	0	1	0	0	0	0	80	0	1	0	0	0	0	0	0	1	0	4	7	7	7	7	7	4	4	7	7	7	4	1	
115	palaniammal	1	1	0	1	0	0	0	60	0	0	1	1	0	0	1	1	1	1	2	1	2	1	2	2	1	1	1	1	1	1	1	
116	anbu	0	0	1	1	0	0	0	95	0	0	0	0	1	0	1	0	0	0	5	5	2	2	6	2	3	2	2	6	3	3	1	
117	parvathy	0	1	1	1	1	0	0	60	1	1	0	0	0	1	1	1	0	0	4	2	2	2	3	1	1	1	3	1	2	2	1	
118	kailasamy	0	0	0	0	0	0	1	85	0	0	0	0	0	0	1	0	0	0	7	7	1	1	6	2	2	1	2	7	1	2	1	
119	mahesh	1	0	0	1	0	0	0	100	1	1	1	1	0	1	1	1																

sno	Name	low mood	memory	behaviour	sleep	sight	hearing	others	Cradi Score	CGS-1	CGS-2	CGS-3	CGS-4	CGS-5	CGS-6	CGS-7	CGS-8	CGS-9	CGS-10	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12	number CR	
121	moorthy	0	0	1	0	0	0	0	60	0	0	0	0	0	0	0	1	0	0	6	7	6	7	6	6	6	6	6	6	6	7	1	
122	mohanraj	0	0	0	0	0	0	0	20	1	1	1	1	0	1	1	0	0	1	4	4	1	1	4	1	1	1	1	4	1	1	1	
123	thangavel	0	1	0	1	0	0	0	95	0	0	1	1	0	1	1	1	1	1	3	3	3	2	2	1	2	2	2	2	2	2	1	
124	janaki	0	0	1	0	0	0	0	90	0	0	1	0	0	1	1	1	0	1	3	5	1	5	5	1	4	1	5	1	4	4	1	
125	dhanushkodi	0	0	0	0	0	0	0	70	1	1	1	1	0	0	1	1	0	0	2	2	1	1	2	1	1	1	1	1	2	2	1	
126	indra	0	0	1	0	0	0	0	90	0	1	0	0	0	0	1	0	1	0	6	6	6	6	6	1	1	6	1	6	6	1	1	
127	veeramma	1	0	1	0	0	0	0	85	1	1	0	1	0	0	1	0	0	0	1	1	5	5	1	1	1	5	1	1	6	1	1	
128	saroja	0	1	1	0	0	0	0	75	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	2	2	1
129	padmavathi	1	0	1	1	1	0	0	85	0	1	0	0	0	0	1	1	1	1	1	1	5	5	1	1	1	5	1	1	1	1	1	
130	malika	0	0	1	0	0	0	0	95	0	0	0	0	0	0	1	1	0	0	7	7	7	7	7	4	4	7	7	7	7	4	1	
131	dhanalakshmi	1	1	1	1	0	0	0	75	0	1	1	1	0	0	0	1	1	0	6	5	4	5	6	1	1	5	5	6	4	1	1	
132	lakshmi	0	0	1	0	0	0	0	80	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	2	5	1	5	1	1	5	1	
133	vijaya	1	1	1	0	0	0	0	70	1	1	1	1	0	1	1	1	0	1	1	1	1	4	1	1	1	1	2	1	1	1	1	
134	indrani	0	0	1	0	0	0	0	70	0	0	0	0	0	0	1	1	0	0	6	6	5	5	6	2	2	6	5	5	2	2	1	
135	thulasi	0	0	0	0	1	0	0	65	0	0	0	0	0	0	0	1	0	0	6	6	6	6	6	6	6	6	6	6	7	4	1	
136	geetha	0	0	1	0	0	0	0	80	0	0	0	0	1	0	0	0	0	0	6	6	3	2	6	3	3	3	2	3	3	3	1	
137	muthulaxmi	0	0	1	1	0	0	0	80	1	1	1	1	0	0	0	1	1	1	6	6	3	3	2	2	2	2	2	6	2	2	1	
138	palaniammal	0	0	0	1	0	0	0	85	0	0	0	1	0	0	0	0	1	0	7	6	6	5	6	5	5	6	5	6	5	6	1	
139	kamala	1	1	1	1	1	0	0	80	1	1	1	0	0	0	1	0	0	1	6	6	2	3	6	2	2	3	3	6	2	2	1	
140	vasantha	0	0	1	0	0	0	0	60	0	1	1	1	0	0	1	0	0	1	2	2	1	1	3	2	2	2	1	3	1	1	1	
141	soundamma	0	0	0	0	1	0	1	85	1	1	1	1	0	0	1	1	1	1	6	5	2	2	6	3	2	2	2	6	3	3	1	
142	menaka	1	0	1	1	1	0	0	80	1	1	0	0	0	0	1	1	1	0	6	6	2	2	6	2	2	2	2	5	3	3	1	
143	pachaiammal	1	1	1	1	0	0	0	60	1	1	1	1	0	1	1	1	1	1	1	2	1	2	1	1	1	2	2	2	1	2	1	
144	pachaiammal	1	1	1	0	1	0	0	50	1	1	1	1	0	0	1	1	1	1	3	3	6	2	3	2	2	2	2	3	2	2	1	
145	valliammal	0	0	0	0	0	0	0	85	0	1	1	1	1	1	1	0	1	0	5	5	3	5	5	5	5	5	5	5	5	5	1	
146	jayalaxmi	1	1	1	1	0	0	0	85	0	0	0	0	0	0	1	1	0	0	6	6	6	6	3	3	6	6	3	6	6	2	1	
147	vijayalakshmi	1	0	1	0	0	0	0	75	1	1	1	1	1	1	1	1	1	1	2	2	5	5	3	1	1	4	1	3	5	1	1	
148	saroja	0	0	1	0	0	0	0	80	0	0	1	0	0	1	0	1	1	1	5	5	1	1	5	3	3	1	3	4	1	2	1	
149	gokulaxmi	0	0	1	0	0	0	0	70	0	0	0	0	1	0	1	1	0	0	2	3	2	2	3	2	3	3	2	3	3	2	1	
150	mariammal	1	1	1	0	0	0	0	75	1	1	1	0	0	1	1	1	1	1	5	5	1	1	5	1	1	1	1	1	1	1	1	
151	lakshmi	1	0	1	0	0	1	0	75	0	0	0	0	0	1	0	0	1	0	2	2	7	6	2	2	2	6	2	2	6	2	1	
152	bakyam	1	1	1	1	0	0	0	70	0	0	0	1	0	1	0	1	1	1	5	5	5	5	4	5	4	4	4	5	4	4	1	
153	rajam	1	0	0	0	0	0	1	95	0	0	1	1	0	1	1	1	1	1	6	6	1	1	6	1	1	1	5	6	1	1	1	
154	muniyal	1	0	1	0	0	0	1	60	1	1	1	1	1	1	1	0	0	0	2	3	2	2	3	2	2	3	2	2	3	3	2	
155	susheela	0	0	0	1	0	0	0	80	0	0	0	0	1	0	0	0	0	0	6	6	5	5	5	2	2	5	2	5	5	2	1	
156	samundeswari	0	0	1	0	0	0	0	75	1	1	0	0	0	0	0	1	0	1	5	5	5	5	5	2	2	5	2	5	5	2	1	
157	mary	0	0	1	0	0	0	0	100	0	0	0	0	1	0	0	0	0	0	5	5	6	6	5	1	1	5	2	5	6	6	1	
158	sumathi	0	0	1	1	0	0	0	75	1	0	1	0	1	1	0	1	0	0	6	5	2	2	5	1	2	2	2	5	2	2	1	
159	charlesmary	0	0	0	0	0	0	0	95	0	1	0	0	0	0	0	1	0	0	6	6	5	5	6	5	6	5	5	7	5	6	1	
160	ammu	0	0	1	1	1	1	0	85	0	0	0	0	0	0	1	0	0	0	5	5	5	5	5	2	2	5	2	5	5	2	1	
161	malika	0	0	0	0	0	0	0	85	1	0	1	0	1	1	1	1	0	1	5	5	2	2	5	1	1	2	1	5	2	1	1	
162	padma	0	0	1	1	0	0	1	80	1	1	0	1	1	0	1	1	0	0	5	5	2	2	5	1	1	5	1	1	3	1	1	
163	sasikala	0	0	1	1	0	0	0	75	1	0	1	0	0	0	0	1	1	1	6	6	2	2	6	2	2	2	2	6	2	2	1	
164	chandra	1	0	1	0	0	0	0	80	1	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
165	arasi	0	0	0	0	0	0	1	85	1	1	1	1	0	0	1	1	1	1	2	2	2	2	2	1	2	2	2	1	2	2	1	
166	sakunthala	0	1	1	1	0	0	1	65	1	1	1	1	1	1	1	0	1	1	1	2	1	1	1	1	1	2	1	1	1	1	1	
167	devika	0	1	0	1	0	0	1	85	1	0	0	0	1	0	0	0	1	0	6	6	5	5	5	1	1	2	2	5	1	1	1	
168	angamuthu	1	1	1	1	0	0	0	75	0	1	1	1	0	0	0	1	1	0	6	5	4	5	6	1	1	5	5	6	4	1	1	
169	govindamani	0	0	0	0	1	0	0	65	0	0	0	0	0	0	0	1	0	0	6	6	6	6	6	6	6	6	6	6	7	4	1	
170	parvatham	0	0	0	1	0	0	0	85	0	0	0	1	0	0	0	0	1	0	7	6	6	5	6	5	5	6	5	6	5	6	1	
171	kalavathy	0	0	1	0	0	0	0	80	0	0	1	0	0	1	0	1	1	1	5	5	1	1	5	3	3	1	3	4	1	2	1	
172	saroja	1	1	1	1	1	0	0	80	1	1	1	0	0	0	1	0	0	1	6	6	2	3	6	2	2	3	3	6	2	2	1	
173	papaathi	0	0	1	0	0	0	0	60	0	1	1	1	0	0	1	0	0	1	2	2	1	1	3	2	2	2	1	3	1	1	1	
174	sampoarana	0	0	0	0	0	0	0	70	1	0	0	0	1	0	1	0	0	0	7	7	6	6	7	1	3	5	5	6	6	5	1	
175	subramani	0	0	1	0	0	0	0	75	0	0	0	0	0	0	0	1	0	0	6	5	1	1	6	5	5	1	5	6	2	6	1	
176	narasimhan	0	0	0	0	1	1	1	65	0	0	0	0	0	0	1	0	0	0	6	5	2	1	5	2	1	1	5	1	1	1	1	
177	rasathi	0	0	1	0	0	0	1	80	1	1	0	1	1	1	1	1	1	0	5	5	5	5	5	5	5	6	5	5	5	6	1	
178	angamuthu	0	1	1	0	0	0	0	75	0	0	0	1	1	0	1	1	0	1	5	5	2	2	5	1	1	1	2	5	1	1	1	