

## “Occurrences and Economic Implications of Chronic Pain with reference Coimbatore City, India”

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**Abstract:** The present paper tries to fill the vacuum in the field of Community Based Research in Chronic Pain. Data quantitative data collected on prevalence of pain, its chronic nature, economic implication, etc are analysed and presented. The chronic pain among the general public, particularly above 50 years age group is explored from aging and economic perspectives. An attempt is made to quantify the economic implications in terms of loss of working days / income and expenditure borne by the respondents.

**Keywords:** Chronic Pain, Economic Implications, Loss of Working Days / Income, Treatment Expenditure.

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### I. INTRODUCTION TO PAIN

Almost all of us experience pain at one point of the moment or other. An injury or a cut, for example, in any part of our body may cause pain. It is neurological signal that helps our brain to sense that there is some thing wrong with the bodily part where it pains. However, this is what we call normal pain which last only for a reasonable period and with the curing of the cut or muscle pull, the pain also goes.

At the same time, the part of the body that got the injuries keeps hurting weeks, months, or even years till cure. A general definition of chronic pain is that it lasts for 3 to 6 months or more. Most of the medical practitioners believe that chronic pain has effects on day to day activities and mental health.

#### Definition of Chronic Pain

The simpler definition for chronic or persistent pain is ‘a pain that continues when it should not (IASP 2014). However, Chronic Pain can be described as “ongoing or recurrent pain, lasting beyond the usual course of acute illness or injury or more than 3 to 6 months, and which adversely affects the individual’s well-being.”

Pain is also defined at a later point of time by IASP, that “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (IASP, 2015).

Pain is often caused by an internal stimuli which is intense or damaging in nature, and usually unbearable. The pain causing stimuli can be any thing including a cut in the arm or stab injury in the forehead or even a burn injury in the body. However, it is difficult to define pain as it is a complex and subjective process. But, in general parlance, pain is put simply as “unpleasant sensory and emotional experience.” In the field of medicine, pain is considered as diagnosable “symptom of an underlying condition” (IASP, 2015).

### II. MEANING AND CONCEPT OF PAIN

It is a mental state, during the experience of pain, that prevents the person to back away from harmful circumstances which may lead to further damage to the bodily parts, mainly to avert same painful experiences (Northern Neurobiology Group, 1983).

In most of the cases, pain prolongs only till the moment noxious stimulus is removed, but persist notwithstanding apparent healing of the body. Likewise, another interesting fact is that even without any detectable stimulus, damage or disease pain may arise (Dennis C Turk and Robert H Dworkin, 2004).

Though omnipresent, practitioners see that pain is inherently subjective and can be known only when the person expresses it in the form of words or show by their behaviour. Moreover, pain has a negative association with body and mental functioning and removal of pain results in improved functioning and patient satisfaction. However, studies have proved that pain and functioning are only modestly related (Waddell G, 1998).

Researchers and doctors feel that the mere symptom reduction in pain treatment is inadequate as we need to give importance to Physical, emotional, and social functioning and patient satisfaction and perception of improvement.

Authors like Waddell observe that “*over the past few decades there has been a growing realization that the traditional outcome domains of symptom reduction and safety are inadequate when evaluating response to treatments for chronic disease states and symptoms that are as subjective as pain. Physical, emotional, and social functioning and patient satisfaction and perception of improvement have been identified as important targets of intervention when the treatment being evaluated does not cure a disease (Waddell G, 1998).*”

### III. LITERATURE REVIEW

#### 3.1 Definition and Nature of Chronic Pain

Chronic pain is said to be originate in the body, or in the brain or spinal cord and is often considered to be difficult to treat. Chronic pain is considered as a pain that lasts for a long time. The practitioners distinguish between acute and chronic pain. However, chronic pain is defined and ascertained if prolongs for more than 6 months since onset, (Turk, D.C.; Okifuji, A., 2001). The medicine for pain is determined based on its origin, that is, whether the pain is arises and initiates from tissue damage or is neuropathic.

At the same time a few have suggested that pain transits from its acute status to chronic for which it takes a minimum of 12 months (Spanswick, C.C., 2001). The other classification says that acute pain is one that last less than 30 days, subacute pain lasts from one to six months whereas chronic pain last for more than 6 months (Thienhaus, O.; Cole, B.E., 2002). A popular alternative definition of chronic pain, involving no arbitrarily fixed duration, is "pain that extends beyond the expected period of healing" Turk, D.C.; Okifuji, A., 2001).

#### 3.2 Symptoms and causes

Pain is considered as a indication and ground in many medical conditions that affects a ‘*person's quality of life and general functioning*’ (Br J Anaesth. 2008). In western nations pain is motivating factor to consult a physician (Debono, DJ; Hoeksema, LJ; Hobbs, RD (August 2013). However, simple pain medications are proved to be enough most of the cases (Moore, RA; Wiffen, PJ; Derry, S; Maguire, T; Roy, YM; Tyrrell, L, 2015). Certain psychological attributes namely hypnotic suggestion, social support, excitement or distraction plays a role in sensing the intensity or unpleasantness of pain (Sydney Symposium of Social Psychology, 2005) (*Sensory, motivational and central control determinants of chronic pain: A new conceptual model. p. 432*).

#### 3.3 Extent of Pain as a health problem

Epidemiological studies proved that up to half of the world population are affected by chronic pain (Welsch P, Sommer C, Schiltenswolf M, Häuser W., 2015). In a quantification, according to prestigious Lancet (2016), in which 20% of the health-related complaints in India were related to pain which is said to be next to fever. In this study about 7,500 consultant physicians were asked about their 2 lakh consultation in which about half million health related complaints were analysed. It has also been quantified that about thirteen percent of urban population is affected by chronic pain.

In the case of Tamilnadu as well as at all India level, Chennai city stands top with almost 22% of pain affected dwellers. However, in the case of rural population, the pain is the much larger problem as the states like Kerala, Maharashtra and West Bengal survive with about 25% of their population suffers from pain.

With respect to profession-wise pain, up to 50% of blue-collar workers such as miners, goldsmiths, rice farmers, and oil drill workers in India suffer from pain. Studies have revealed that Dentists and Nurses as well as IT Professionals face the threat of chronic neck and back pains. A study conducted in Maharashtra reveals that almost 90% of nurses had back, neck or joint pain.

The gender-wise distribution of pain complainants establishes that women is the major sufferer than men. Also the feminine gender face the chronic nature of pain whereas in the case of men it is only intermittent in nature.

#### 3.4 Duration and length of pain

As expected aging plays an inevitable role in prolonged pain. Likewise, the prolonged pain varies in cases of different genders, and ages. About 33% of the population with pain experience the same for more than 3 years. These pain sufferers have either intermittent pain (22%) or constant pain (11%).

#### 3.5 Varieties of Pain

It is quantified that knee pain and other joint pains account for the majority (80%) of pain complaints. However, low back pain is identified as the major cause for pain and disability which mostly affects men than women. Likewise, a sizeable population always complain about headaches and migraine.

### 3.6 Economic cost of Pain

Nietzsche has upheld the positive value of pain saying "What does not destroy me, makes me stronger" (Shapiro, Fred R. 2006). One judgment on the value of pain is given by German philosopher, Friedrich Nietzsche, who wrote: "Only great pain is the ultimate liberator of the spirit...I doubt that such pain makes us 'better'; but I know that it makes us more profound" (Leiter, Brian, 2015). In some arguments put forth in physician-assisted suicide oreuthanasia debates, pain has been used as an argument to permit people who are terminally ill to end their lives (Weyers, H, 2006).

## IV. RESEARCH METHODOLOGY ADOPTED

### 4.1 Title of the Study

“Occurrences and Economic Implications of Chronic Pain: A Case Study of Coimbatore City, Tamilnadu, India”

### 4.2 Physical Area of the Study

The study is confined to the metropolitan city limits of Coimbatore, Tamilnadu, India.

### 4.3 Period and duration of the Study

The study was conducted during the period of March – April 2017.

### 4.4 Universe / Population / Samples

#### a. Universe:

The entire population that lives with one or other sort of pain in the Coimbatore District constitutes universe.

#### b. Population:

The parents / grand parents of the students studying in SNR Sons College, Coimbatore who were reportedly having one or other sort of pain

#### c. Sampling:

A two stage stratified random sampling procedure was adopted as detailed below:

**Stage – I:** A broad list of students who had been imparted knowledge about Chronic pain and the data collection methods was prepared (146 students enlisted).

**Stage – II:** Of these 146 students, 112 students with following categories were identified

- i. Three relatives with reported chronic pain - 12
- ii. Two relatives with reported chronic pain - 53
- iii. One relative with reported chronic pain - 47

Thus the total identified persons with pain were as follows:

**Table - 4.1:** Total No. of Respondents identified

Category	No.	Effective respondents	Total
Three relatives with pain	12	12 * 3	36
Two relatives with pain	53	53 * 2	106
One relative with pain	47	47 * 1	47
<b>Total</b>			<b>189</b>

### 4.5 Data Collection

A structured questionnaire was prepared and given to trained students (*Annexure – I*). These trained students volunteered in data collection as per the methods / techniques imparted. The questionnaire consisted of:

- a. Primary / direct data collection from their relatives and
- b. Observation of the relatives with pain

### 4.6 Analysis and expected outcome

The collected data was fed into SPSS software. The following analyses were done and results were obtained.

- a. Classification of respondents based on gender, age and family type
- b. Socio-economic conditions of the respondents
- c. Analysis of extent of different types of diseases / pains and family support, etc.
- d. Quantification of economic loss / burden arose due to pain

## V. FINDINGS OF THE STUDY

### 5.1 Gender-wise distribution

The gender-wise distribution of the respondents shows that slightly more than a majority of the respondents were female (54.5%) whereas only the remaining were male (45.5%).

**Table - 5.1: Gender of the Respondents**

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
3 persons-with-pain in a household	21	11.1%	15	8.0%	<b>36</b>	<b>19.0%</b>
2 persons-with-pain in a household	43	22.8%	63	33.3%	<b>106</b>	<b>56.1%</b>
1 person-with-pain in a household	22	11.6%	25	13.2%	<b>47</b>	<b>24.9%</b>
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

From the above table it is established that about 56% of the households have at least 2 people with some sort of pain, either chronic or non-chronic pain.

### 5.2 Age of the respondents

From the data available, it is understood that a vast majority of the respondents were above 60 age group with 87% belonged to this age group.

**Table - 5.2: Age of the Respondents**

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Up to 50 years	14	7.4%	11	5.8%	25	<b>13.2%</b>
51 – 60 years	26	13.8%	17	9.0%	43	<b>22.8%</b>
61 – 70 years	33	17.5%	59	31.2%	92	<b>48.7%</b>
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

The distribution of the respondents by age clearly establishes that nearly half of the respondents / persons with pain belonged to the age group between 61 – 70 followed by 51 – 60 age group (22.8%) and above 71 age group and below 50 years age group respectively with 15.3% and 13.2%.

### 5.3 Gender-wise Employment Status

Among the total respondents, about two fifth of the respondents (40.7%) were pensioners. Again, another roughly about one third of the respondents were found to be dependants / home makers / non income generators (33.3%). The remaining were distributed in various employments / businesses.

**Table - 5.3: Gender and Employment**

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Dependants	16	8.5%	42	22.2%	<b>58</b>	<b>30.7%</b>
Home makers	1	0.5%	4	2.1%	<b>5</b>	<b>2.6%</b>
Business	9	4.8%	2	1.1%	<b>11</b>	<b>5.8%</b>
Employed	31	16.4%	9	4.8%	<b>40</b>	<b>21.2%</b>
Pensioners	29	15.3%	46	24.3%	<b>75</b>	<b>39.7%</b>
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

Approximately two fifth of the respondents with pain were pensioners (40.7%) followed by another 1/5<sup>th</sup> of the respondents who were productive income generators as salaried persons (21.2%) and a very insignificant were business people (5.8%). It is heartening to note that those 1/3<sup>rd</sup> dependent respondents were left without any source of income either in the form of salary or pension.

### 5.4 Income status

Among the respondents, except those of dependents, the remaining were blessed with one or the other source of income. Their income ranged among different income slabs as 30% had a income range of Rs.10,000/- to 25,000/- followed by 15.9% having an income above Rs.50,000/- per month whereas another 11% with an income between Rs.25,000/- 50,000/- and only 9% had income less than Rs..10,000/- per month. In a simple overview, it is understood that almost a vast majority of the respondents (57.5%) earn income of Rs.10,000/- and more.

**Table - 5.4:** Status of Income #

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
No income	17	9.0%	46	24.3%	63	33.3%
Up to 10,000/- pm	11	5.8%	6	3.2%	17	9.0%
10,001/- to 25,000/-	33	17.5%	24	12.7%	57	30.2%
25,001/- to 50,000/-	9	4.8%	13	6.9%	22	11.6%
50,001/- and above	16	8.5%	14	7.4%	30	15.9%
<b>Total</b>	<b>59</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

#: Income per month

### 5.5 Sources of Income

It is no surprise to note that the major source of income is pension as 3/5<sup>th</sup> of the respondents get pension. This distribution is clearly in line with the age group of the respondents as majority are senior citizens (60+ age group). Likewise, in both men and women category a majority belonged to pensioner class only. However, as nearly one third of the respondents being salaried class (28.6%), it is understood that the respondents below 60 age group also suffer from some sort of pain.

**Table - 5.5:** Income Source

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Salary	24	19.0%	12	9.5%	36	28.6%
Pension	34	27.0%	43	34.1%	77	61.1%
Business	6	4.8%	2	1.6%	6	4.8%
Rent	4	3.2%	3	2.4%	7	5.6%
<b>Total</b>	<b>69</b>	<b>54.8%</b>	<b>57</b>	<b>45.2%</b>	<b>126</b>	<b>100.0%</b>

**Note:** 126 respondents who reportedly had regular monthly income were taken into account for calculation of sources of income

### 5.6 Pain Categories

When analyzed, the data shown that more than 3/4<sup>th</sup> of the respondents (78.3%) had knee joint pain. This Knee pain originates in any of the bony structures compromising the knee joint and has become a common problem amongst the elders in India today. Among the 148 respondents who reported knee pain, 87 were female (46%) followed by 61 male (32.3%).

**Table - 5.6:** Pain categories

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Stomach Pain	8	4.2%	3	1.6%	11	5.8%
Head Ache / Migraine	2	1.1%	6	3.2%	8	4.2%
Sprain / fractures	14	7.4%	5	2.6%	19	10.1%
Knee Pain	61	32.3%	87	46.0%	148	78.3%
Cancer	1	0.5%	2	1.1%	3	1.6%
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

Apart from knee pain, sprain and fractures was a source for pain with 10.1% of the respondents reportedly affected by it which may be attributed to the old age mishaps.

### 5.7 Duration of Pain

Again it was not a surprise to note that an overwhelming majority of the respondents (94.2%) had chronic pain suffering for more than 6 months. According to *Okifuji, A., (2001)*, a pain is classified as chronic pain if the pain prolongs for more than 6 months since onset.

**Table - 5.7:** Duration of Pain

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Less than 6 month	8	4.2%	3	1.6%	11	5.8%
7 – 12 months	16	8.5%	19	10.1%	35	18.5%
13 – 24 months	8	4.2%	14	7.4%	22	11.6%
25 – 36 months	11	5.8%	8	4.2%	19	10.1%
More than 36 months	43	22.8%	59	31.2%	102	54.0%
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

Further, it is noticed that about 54% of the respondents were suffering for considerably a longer periods, for about 36 months or more followed by about 18.5% suffering for a period between 7 – 12 months. About 1/5<sup>th</sup> of the respondents suffer from pain for a period ranging between 1 – 2 years.

### 5.8 Whether Working Day Lost – Income-wise

The pain is a major cause for income loss. It had invariably affected the respondents, be it salaried or business class. Among the income generating 44 respondents, 82% were salaried and the rest were getting income from business. These income generating respondents have lost their working days due to pain resulting in income loss.

**Table - 5.8:** Loss of Working Day / Income- category-wise

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Salary	24	54.5%	12	27.4%	36	<b>81.9%</b>
Business	6	13.6%	2	4.5%	8	<b>19.1%</b>
<b>Total</b>	<b>30</b>	<b>68.2%</b>	<b>14</b>	<b>31.8%</b>	<b>44</b>	<b>100.0%</b>

*Note:* 44 respondents who reportedly had salary / business income were taken into account for calculation of loss of income

### 5.9 No. of Working Days Lost – Chronic pain

As the previous table established that 82% of the respondents had lost income due to pain, it will be appropriate to know the extent of loss in terms of time / days.

**Table - 5.9:** Days lost in a year (Chronic Pain)

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Up to 3 days lost	2	4.5%	1	2.3%	<b>3</b>	<b>6.8%</b>
4 - 7 days lost	5	11.4%	5	11.4%	<b>10</b>	<b>22.7%</b>
8 -15 days lost	14	31.8%	4	9.1%	<b>18</b>	<b>40.9%</b>
16 – 30 days lost	6	13.6%	3	6.8%	<b>9</b>	<b>20.5%</b>
1 - 2 months lost	3	6.8%	1	2.3%	<b>4</b>	<b>9.1%</b>
<b>Total</b>	<b>30</b>	<b>68.2%</b>	<b>14</b>	<b>31.8%</b>	<b>44</b>	<b>100.0%</b>

*Note:* 44 respondents who reportedly had salary / business income & chronic pain were taken into account for calculation of loss of working days

Among the salaried and business people who are suffering from pain, 2/5<sup>th</sup> of the respondents lost between 8-15 days during the last year alone whereas 1/5<sup>th</sup> each lost 4-7 days and 16-30 days respectively.

### 5.10 Working Days Lost – Non-chronic pain

**Table - 5.10:** Days lost in a year (Non-chronic Pain)

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Up to 3 days lost	4	57.1%	1	14.3%	<b>5</b>	<b>71.4%</b>
4 - 7 days lost	1	14.3%	1	14.3%	<b>2</b>	<b>28.6%</b>
<b>Total</b>	<b>5</b>	<b>71.4%</b>	<b>2</b>	<b>28.6%</b>	<b>7</b>	<b>100.0%</b>

*Note:* 7 respondents who reportedly had non-chronic pain were taken into account for calculation of loss of working days

As in the case of chronic pain, the respondents who had non chronic pain were assessed for quantification of working days lost due to pain. Out of 7 respondents, 5 had lost up to 3 days only whereas the remaining 2 lost up to 7 days.

### 5.11 Annual Income Loss – Chronic pain

Due to working day lost, the respondents with chronic pain have naturally lost their income too. It was necessitated to know the extent of earnings lost since it not only impact the living standards, but also need to be linked with the expenditure associated with the pain and its treatment.

**Table - 5.11:** Income lost in a year (Chronic Pain)

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Up to 1,000	3	6.8	6	13.6	9	20.5
1,001 – 5,000	4	9.1	4	9.1	8	18.2
5001 – 10,000	9	20.5	1	2.3	10	22.7
Rs.10,001 – 25,000	12	27.3	2	4.5	14	31.8
Above Rs. 25,001	2	4.5	1	2.3	3	6.8
<b>Total</b>	<b>30</b>	<b>68.2</b>	<b>14</b>	<b>31.8</b>	<b>44</b>	<b>100.0</b>

*Note:* 44 respondents who reportedly had salary / business income & chronic pain were taken into account for calculation of loss of Income

From the above table, it is clear that nearly 1/3<sup>rd</sup> of the salaried / business respondents with pain (31.8%) had lost income between Rs.10,001 – 25,000/-. Among the remaining respondents 1/5<sup>th</sup> lost up to Rs.1,000/- followed by nearly another 1/5<sup>th</sup> lost income between Rs.1,001 - 5,000/-. Similarly, slightly more than 1/5<sup>th</sup> of respondents suffered income loss in the range of Rs.5,001 – 10,000/-

### 5.12 Income Lost – Non-chronic pain

**Table - 5.12:** Income lost in a year (Non-chronic Pain)

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Rs.1,001 – 5,000	2	28.6%	1	14.3%	3	42.9%
Rs.5,001 – 10,000	3	42.9%	1	14.3%	4	57.1%
<b>Total</b>	<b>5</b>	<b>71.4%</b>	<b>2</b>	<b>28.6%</b>	<b>7</b>	<b>100.0%</b>

*Note:* 7 respondents who reportedly had salary / business income & non-chronic pain were taken into account for calculation of loss of Income

In the case of non-chronic respondents 4 out of 7 had a income loss between Rs.5,001 – 10,000/- and the remaining had reported a loss between Rs.1,001 – 5,000/.

### 5.13 Annual Treatment Expenditure

**Table - 5.11:** Expenditure in a year (Chronic Pain)

Category	Male		Female		Total	
	No.	%	No.	%	No.	%
Up to Rs.1,000	39	20.6%	47	24.9%	86	45.5%
Rs.1,001 - 5,000	22	11.6%	34	18.0%	56	29.6%
Rs.5,001 - 10,000	11	5.8%	13	6.9%	24	12.7%
Rs.10,001 - 25,000	9	4.8%	5	2.6%	14	7.4%
Above Rs. 25,001	5	2.6%	4	2.1%	9	4.8%
<b>Total</b>	<b>86</b>	<b>45.5%</b>	<b>103</b>	<b>54.5%</b>	<b>189</b>	<b>100.0%</b>

Though an overwhelming majority had chronic pain, it is shocking to note the least importance attached to the treatment by the respondents. Since it is a chronic pain, it is the common expectation that the treatment may last for some time and require a larger amount. Unexpectedly, the data reveals that the respondents had spent only a meager amount for treatment.

Of the 189 respondents with pain, only 23 had spent an amount more than Rs.10,000/- for treatment purposes. At the same time, a total of 86, nearly half of the respondents spent less than Rs.1,000/- during the previous years.

## VI. CONCLUSION AND SUGGESTIONS

### 6.1 Conclusion

From the above discussions, it is clear to note that the general population above 50 years of age in this part of our state of Tamilnadu most probably prone to be affected by pain, particularly, chronic pain in knee joints. The following are the conclusions:

**Chronic Pain:** It is an ailment ascertained if it is persistent for more than 6 months in its symptoms.

**Gender:** About 54.5% of the respondents were women who suffered pain.

**Age:** Approximately two third of the population were above 60 years of age and face chronic pain

**Source of Income:** 30% were dependent without any stable income; 41% were pensioners and 25% had regular monthly salary or business income

**Range of Income:** With respect to monthly income, 30% had an income up to Rs.25,000/- per month and 27.5% had a income above 25,000/- per month.

**Cause of Pain:** Among the pain categories, Knee Joint pain played a major role in suffering the elderly (78.3%) followed by sprain & fractures (10.1%)

**Chronic Nature of Pain:** About half of the respondents were reportedly suffering from chronic pain for more than 36 months

**Loss of Income Generating Working Days:** About 22% lost 4-7 income generating working days and another 20% lost 16-30 days whereas 2/5 of the respondents (41%) lost 8-15 days.

**Quantum of Income Loss:** About half of the respondents (54.5%) had lost between 5,000/- and Rs.25,000/- whereas 38.7% of the respondents had a income loss between Rs.1,000 – 5,000/-

**Quantum of Treatment Expenditure:** Nearly half of the respondents (45.5%) had spent only up to Rs.1,000/- whereas another 30% had spent between Rs.1,001/- and Rs.5,000/-. The remaining insignificant numbers only spent more than Rs.5,000/- annually.

## 6.2 Scope for further studies

1. As the present study mainly focused on nature, longevity and economic loss in terms of income / treatment expenditure, it is highly suggested that future studies may be undertaken on the physiological / lifestyle causes responsible for chronic pain.
2. As the knee joint pain is a major cause for chronic pain, it may further investigated to know whether body weight or progressive wearing of the cartilage in the knee joint is the reason for knee pain.
3. It is needed to be proved whether the people are accustomed to live with severe chronic pain, as they spent very meager amount for treatment.

## 6.3 Limitations

The present study is limited to Coimbatore City Municipal Corporation. Also the respondents were drawn from among the family members of the students studying in SNR Sons College, Coimbatore. This may limit the scope of generalization and application of the findings.

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