CHAPTER 6

RESULTS AND DISCUSSION
A. Results:

As explained earlier case papers of the patients who were diagnosed to be the genuine cases of spondylosis have been maintained and the details of the symptomatological and radiological reports have also been given in the table (6.1). In the same table after the treatment was initiated i.e. post treatment report and the extent of recovery in each of this patient has been given. Large number of patients, about more than 500, have been treated. However only 152 have been enlisted here. Out of 152 cases, 112 have completed the treatment. Rest 40 have discontinued. The same has been indicated in 'Remarks' column. The table gives the symptomatic response both prior to the treatment and post treatment. It can be seen from the table (6.1) that not all patients respond symptomatically in the same way. Among the 5 different symptoms listed in each case of spondylosis, all of them show symptoms of pains in the neck region, similarly the stiffness. However so far as the symptoms of tingling sensation, loss of power, giddiness are concerned there is no uniform indication of the patients. Amongst these 3 symptoms majority showed tingling sensation. In all 30% of the total patients examined showed tingling sensation whereas very few i.e. 11.8% of the patients show loss of power while 12.5% of the patients show giddiness. So far as radiological symptoms are concerned 51.3% show narrowing of the spaces while only 32% show muscle spasm, straightening of the spine and osteophytes deposition and degenerative changes are seen respectively 36 and 47.3% of the patients. These variations are possibly constitutional in nature. At the end of the treatment i.e. the post treatment effects are all the patients those who have continued, i.e. in 100% cases there is disappearance of
THE INTERVERTEBRAL DISC
AS AN OSMOTIC SYSTEM

Extradiscal interstitium

Pressure

Metabolite and fluid exchange

Intradiscal interstitium
Macromolecular substance causing water absorption

Cartilage Plate and annulus fibrosus serve as semipermeable membrane

Fig. 6.1
pains. Similarly 88.3% showed disappearance of stiffness. Whereas the disappearance of tingling sensation, loss of power, giddiness are shown respectively in 58%, 15% and 15% of the patients. Radiologically narrowing of space has disappeared in 63% of the patients. Muscle spasm which was shown by 3.2% of the patients before treatment, has disappeared in 2.6% after the treatment. In other words in 81% of the patients who were showing muscle spasm there was recovery. Similarly recovery in the straightening of spine is shown in 30% of the patients.

1. **Sexwise classification of the response**

In the number of patients who have continued and completed the treatment i.e. 112 out of 152 enrolled, sexwise classification has also been made. These data are given in Table 6.2. This is only to know among the patients whether males or females, suffered from the ailment more. In this respect, it can be seen from the classification of patients sexwise that females suffering from spondylosis are 76 i.e. 67.86% while males are 36 i.e. 32.14%. That means the females are in double the males who suffered the ailment.

2. **Agewise classification of the patients**

Table No. 6.3 shows classification of patients into 7 groups. This indicates both internal classification of male and female while classifying agewise 10 year difference has been maintained i.e. 11-20, 21-30, 31-40, 41-50, 51-60, 61-70 and 70 onwards. These groups include both males and females. In terms of percentage these 7 groups make a very good normal distribution; where the age group 11-20 and the age group above 70, tail left hand side and right hand side. The age group 31-40 and 41-50
and 51-60 make the dome, with a peak of 34.82% falling into 41-50 group. These groups when classified sexwise, the maximum average at 41-50 age. This observation precisely tells that irrespective of the sex the age group is important, which suffers from the ailment in pronounced way.

3. Occupationwise classification

Patients who have undergone treatment came from various occupations. This has been listed in the Table-6.4. There are five categories of the occupation. Those carrying weight on head or back, those involved in writing i.e. desk work for a longer period and category that looking down for a long period. Fourth category is computer operators, clerical work and others and the last but not the least category is housewife. These categories have been again classified into male and female. There were no male patients in first category, while there is one patient in female. There are 16 male patients in the second category and 12 in the female. In the third category there are 5 male patients while there are 4 female patients. In the fourth category i.e. computer operator or of clerical work, there are 15 male patients and only 6 females. In the last category i.e. housewives there are 53 female patients which is the largest.

4. Weightwise classification

Table No. 6.5 shows weightwise classification with internal subclassification into male and female. In this group there are only 3 classes. The class one is an open class with a weight below 40 kg. Class 2 ranging from 41-60 and class-3, 61-80 kg. In the open class i.e. below 40 kg there are only 2 female patients. In the range 41 to 60 there are 7 male patients and 47 females. In the range 61-80 there are 24 male patients and 27
females. In other words the weightwise classification shows that in those ranging 41-60 there are maximum female patients and 61-80 there are maximum male patients.

5. **Positionwise classification**

Table (6.6) shows classification of patients based on cervical disc syndrome and lumbar disc syndrome within which again males and females have been distinctly identified. From the table it becomes clear that if in the former, i.e. cervical disc syndrome 32 male patients are there, 61 are the females which is almost double. And in the latter i.e. lumbar disc syndrome only 4 male patients have been identified but 4 times more i.e. 15 patients are females. In other words, even here, more number of female patients showing both the type of ailment can be seen.

6. **Overall results**

Table 6.7 shows the overall performance of the drugs in recovery of the patients. In other words, the responses of the patients to the drug. This inference has been drawn, based on the number of criteria enlisted in case papers and recorded in table 7.1.

For instance those who show relief in all the five symptoms listed in the table 7.1 and four radiological criteria are considered as 100%. Among them those who meet with 75% of and above of the requirement, they are categorised as best. If the patient showed 50 to 75% recovery in both symptomatic relief as well as radiological criteria, they are categorised as very good. Those showing 25 to 50% are considered as good and those
showing below 25% symptomatic relief and radiological criteria, they are regarded as no recovery.

Based on the above criteria the table 6.7 has been prepared. In this table again sexwise classification has also been made. The overall picture tells that the best results are seen in 95 patients out of 112 i.e. 84.82%. And in this category the female number is larger than the male vis-a-vis the number of patients suffering from the ailments. Next to this category is "very good". In this category there are 17 patients i.e. 15.17% have shown 5 to 7.5 symptametic and radiological recovery. In the last category i.e. 'good', there are no patients at all.

7. Follow-up study

Table No. 6.8 gives follow up study report after treating the patients for 24 weeks with Swadamstradi guggul and Padmakitta yog. The follow up study has been carried out from 6 months to 36 months. The same has been listed in the table 6.8. Nine Patients reported 6 months after completion of the treatment, who show no recurrence. 45 patients examined after one year of completion did not show any recurrence, 17 patients reported 18 months after completion of the treatment and 23 patients who reported 24 months i.e. 2 years after treatment, did not complain. Among 112 patients who completed the treatment and recovered none reported after two and half years. However 3 year after who reported were in 6 numbers, who also did not show any recurrence. Out of 112, 12 patients did not report at all. In other words almost all patients have been examined in this follow up study to ascertain the efficacy and effectivity of the drug.
B. Discussion

It can be seen from the results, that the patients suffering from the ailment of spondylosis, which have been chosen for the study, maintaining the case papers and treating them almost invariably show pains and stiffness in the cervical as well as lumbar spine as a primary symptom. According to Kramer (1981) while diagnosing the ailment based on the symptom, history is very important. Moreover he emphasises on the characteristic shoulder neck pain and stiffness in the cervical spine, appearing very suddenly as a symptom almost ascertaining the ailment. The causes are many. As a rule, continuous turning of the head or kyphotic position of the cervical spine which normally occurs in reading, desk work or watching television are the etiological factors of the ailment. In brief, directing towards the relation to posture, which he emphasises as a root primary cause. In other words the continuous unfavourable position of the head with muscle pull, increases the intradiscal pressure and hence often there is kyphotic position under load.

Under the light of the above observation if we examine the patient variously classified sexwise, agewise etc. we find females suffering from spondylosis are 67.86% (Table 6.2) vis-a-vis to this, is occupationwise (Table 6.4). The occupationwise classification shows that housewives show maximum percentage of spondylosis which is 53%. When we make an agewise classification (Table 6.3) 39 patients out of 112 are seen in the age group 41 to 50. Amongst them 25 are female and 14 are males. Followed by this category is a group ranging from 31 to 40 which is 31 out of 112; and again females are double the number of males. These classifications of observation lead us to infer, that females predominantly
these housewives falling into different age groups are the larger victims of this ailment. This may be because of the fact that the nature of work that is being carried out by them, make them more prone for the ailment. In other words disc wearing and degeneration is much faster in this category. In females, may be either due to continuous attention paid in cooking for hours in a bent position in front of the kitchen platform, added to this are the menstrual cycle as well as child bearing of women aggravate the situation which is not necessary to elaborate here. Amongst the men in the age group of 31 to 50, they are primarily involved in their peak of activities either by way of the sedentary work or continuous movement on the vehicle and hence suffer from the ailment. So far as the patients above 60 are concerned ageing is the main cause which symptomatically reflects the earlier engagement of either sedentary work or movement. This situation is aggravated by sitting in a typical posture before the media for a protracted period.

From the table (6.1) it can be seen that the symptoms tingling sensation and loss of power and giddiness are not exhibited by large number of patients. Especially the loss of power is less frequently seen. There are only 11.8% showing loss of power and giddiness or dizziness more often identified as vertigo is shown by slightly longer number i.e. 12.5%. Possibly depending upon the degree of symptomatic development of the ailment, tingling sensation, loss of power and giddiness are exhibited. These severe cases exhibit tingling sensation and such sensations are normally originated at nerve root. Loss of power may not be the regular feature and loss of power again, is a neurological symptom while giddiness is vestibular in nature. According to Kramer (1981) vertigo
arises in the cervicocephalic syndrome which falls into the generic ailment -
the spondylosis, as a result of change in the position of the head. On
rotation of cervical spine there is a vertigo which remains from few seconds
to minutes.

It is well known that in spondylosis there occurs degeneration of
intervertebral discs with reactive osseous spurs on vertebral borders
(Kramer 1981) as shown in Fig. 3.4. This reduces the gap and the osseous
spurs or osteophytes deposition possibly pinching the spinal cord
generating pains at the root of the nerve. There are reports that more than
92% of the patients consulting the orthopedic surgeon are due to disc
degeneration categorised as intervertebral disc syndrome (Schmorl and
Jughanns, 1968). In the West no distinction between the men and the
women patients approaching the orthopaedic surgeon with the complaint
can be made, while it is predominantly seen in the female patients or
women in India as discussed earlier table (6.2).

So far radiological symptoms are concerned majority of the patients
who are undergoing treatment showed the degenerative changes. While
36% showed straightening of spine. In other words straightening of spine is
concomitant with the degenerative process of spine because of the muscle
pull.

According to Schmorl and Jughanns (loc cit) regular nutritional
supply to the disc cells for a period of several decades cannot be
guaranteed by active and passive mechanism of fluid transport.
Furthermore, there occurs a limitation of movements and rigid fixation in
unfavourable position which further influences the fluid transport in the
intervertebral discs. By making this observation they envisage that continuous supply of nutrient to the disc is essential to replenish the possible loss of fluid material.

Possibly in the fast moving world the anxiety and sedentary work are the deterrent factors in preventing disc regeneration or replenishing it and hitherto there is no medicine in the allopathic world which can either prevent degeneration of disc or help replenishing it, but found in Ayurveda. We may add here that the term regeneration in whole human system is not acceptable to the so called modern science which needs to be looked into in Ayurvedic science.

Patients examined and treated have also been classified according to the weight which is given in the table (6.5). From the table it becomes clear that those weighing their body weight below 40 kg are very few or negligibly small nonetheless they are female. Possibly these patients if we examine, must be falling in the initial stage of puberty. In the weight group 41 to 60 kg, those male patients showing this ailment are only 7, while the females are 47; almost 7 times large in number. So far females are concerned, and those having weight 61 to 80 the picture has changed where there are 29 male patients, but 27 are the females. This very clearly shows that body weight is one of the critical factors which invites this ailment. In the weight group of 41 to 60 kg, why we find more number of female patients is that, most Indian women, the body weight falls into this category may be slim or bulky. However, it is certain that, may be, 60 is a stabilizing factor, but most women in this weight group also enter into two major natural cycles i.e. menstrual cycle and child bearing. These two factors lead to draining of large amount of both blood as well as energy.
Besides that the domestic work that they carry in the middle age is an added disery of the health problem especially in India. If we examine the geometry of the vertebrae we find that there is no lever to carry the body weight or the load, juxtaposition of them in the front, moreover the child bearing process among female changes the posture of the vertebrae.

Nochemson and Morris (1964) developed technique of measuring intradiscal pressure under in vivo condition in human during different body postures and they performed the experiments. According to them in a relaxed supine position a muscle exerts a pressure of 15 kg on a lower lumbar discs. Lying on the side, a slightly bending the back, caused an increased pressure of more than double. The pressure increased more than 100 kp in standing and in bending forward it increased to 140 kp. Bending forward with 20 kp loading of the arms caused an increased pressure to 200 kp. In sitting with the back straight up the pressure in the intervertebral disc is 140 kp higher than in standing. There is further increase when the body is bent forward and particularly if simultaneous loading is done. A pressure on the intervertebral disc is 100 to 60 kp/cm².

Now based on the above observations of above experiments it becomes very clear that the Indian women who stand near the kitchen platform with a burner at a distance of about 1 to 11/2 foot from their body need to bend, which increases the pressure on the lumbar spine. With a nature of cooking frequently they need to operate such as turning, lifting and so on, which increases the load by increasing the pressure more than 200 kp; and such undesirable movements and activities possibly lead to further degeneration of the disc. This is supported by their observation that the muscle action and the loading on the intervertebral discs increased by...
lifting and pulling action in relation to the distance between the load and the body axis.

According to Schluter (1965) the highest stress and strain are found in the center of the intervertebral disc consequently the greatest shear forces are concentrated in this area. He further states that considering the high pressure which is present in the human intervertebral discs for a long period it is not surprising that the degenerative changes develop in a tissue with such poor nutrition. We may add here that if the author refers to the poor nutrition of the disc in particular because of the uncozy movement of the vertebra pinching of and agitating the soft discs which are more or less in a plasmatic condition, the condition is worsen in Indian context especially in women by lack of nutritionally balanced food.

The foregoing discussion presents how the ailments develop and also how we are able to differentiate men and women with their age, occupation and weight, but the point is the post treatment effects have relieved out all these patients those who have continued the treatment from the trouble. From the data we see that 112 patients have continued the treatment out of which all have been relieved of the pains and stiffness in 99 i.e. 83.3% patients. The other symptomatic relief variously differed.

According to orthopaedic experts, the pressure of the discs over the nerve root, cord and nerve are the root causes of the pain. This is accentuated by root canal stenosis which restricts the free movement of the cord causing the oedema of the nerve root. Although the pain is classified as one of the symptoms nonetheless it is a very important sign of the ailment which is immediately reflected. With the treatment we see that all the
patients who have completed the course showed total relief of the pain while the reduction in the stiffness is in 88% of the patients is in itself a significant achievement to qualify the efficiency of the drug. The symptomatic relief in other three i.e., tingling sensation, loss of power and giddiness/dizziness is respectively 38%, 15% and 15% of the patients. These symptoms are not given much importance orthopedically because they are rarely seen in some patients with a severity of the ailment.

In so far as the radiological symptoms are concerned i.e. narrowing of the space, muscle spasm, straightening of the spine after the treatment, the recovery has been seen respectively in 63%, 20% and 30% of the patients. Besides these in 50% of the patients reduction in the osteophytes is also seen. These may be slow but sustained and lasting. According to orthopedic experts the drug must be active in reducing the pressure inside the disc followed by reduction in the oedema of nerve and nerve roots. According to them pain and spasm of the muscle leads to possible loss of lordosis, thereby reducing intervertebral spaces and leading to the increased pressure and prolapse of the disc. The fact that the first registration of the relief in the pain and spasm by all these patients who have undergone treatment is due to recovery in lordosis and relaxation in the intervertebral spaces, thus causing reduction in the pressure and recovering the disc prolapse.

As mentioned elsewhere regular supply of the fluid transport is required to maintain the functional ability and replenishment of the disc (Schmort and Jughanns, 1981). This is accomplished osmotic diffusion of the fluid inside the disc. In other words disc cells are well communicated with external environment within the system. This has been diagramatically
shown in Fig.6.1. The bordering tissues of the inter-vertebral discs act as a semipermeable membrane. In consequence, the permeability varies in different regions. The interior of the intervertebral disc the cartiloge of the disc, the annulus fibrosus the paravertebral structure and also the cancellous bone of the vertebra all partake in the osmatic system. According to Maroudas (1975) and Urban et al (1976) glucose i.e. sugar preferably penetrate the end plates and sulphates the annulus fibrosus. The fibre meshwork permits only the smaller molecules water transports only low molecule substance and metabolic products. The cartilage plates and the annulus fibrosus create a permeability barrier which separates two tissue compartments, the interior of the intervertebral discs and the paravertebral tissues including the cancellous bones of the vertebra. These compartments differ in hydrostatic pressure. The intervertebral disc is subjected to pressure which are related to body posture and weight. The loading can attain values more than 1000 kp. and hence fluids must be transported against these pressures into the disc; otherwise it may dry out in a very short time. The absorption of fluid can only be achieved by osmosis. By this is meant the absorptive pressure which enables water and other solutions to enter into the intradiscal tissue via semipermeable membranes. Osmosis can be maintained against the pressure of loading as long it retains equilibrium with the osmotic pressure. This is maintained by intradiscal mucopolysaccharides which have a high water absorbility and which not only can retain the fluids but also absorb them against the pressure conditions in the discs. While explaining this Kramer (1981) has given a schematic mechanism of disc functioning in so far as fluid movement is concerned. (Fig.6.1) The diagram is self explanatory about
the communication of the disc tissue within the internal environmental milieu.

\[
\begin{array}{c}
\text{Hydrostatic pressure} \\
\text{extradiscal} \\
+ \\
\text{Oncotic pressure} \\
\text{intradiscal} \\
\end{array}
\]

\[
\begin{array}{c}
\text{Hydrostatic pressure} \\
\text{intradiscal} \\
+ \\
\text{Oncotic pressure} \\
\text{extradiscal} \\
\end{array}
\]

The foregoing explanation of the entire mechanism of disc movements and its maintenance of integrity tells that the buffering functional role of intervertebral disc needs continuous replenishment of the fluid and its hydration. It is exactly, here, possibly the present Ayurvedic recipe or drug which is rich in flavonoid compounds, must be acting. The number of flavonoid compounds complexing together have great functional role in the human systems. It has already been indicated that they prevent aging (anonymus). According to Seshadri (1962) majority of the flavonoids occur as glycosides. At time one, two or three glucose molecules are attached to them. Sometimes even glucuronic acid is present, but all these whether polyglycosides or diglycosides are soluble in water. We find even in our analytical report quercitin which has triglycosides. However, phenolic substituents usually improve the solubility characteristic of compounds and phenols are in general easily movable across the biological membrane (Parke 1968). Thus one predicts that flavonoid has weak influences but on a broad range of biological phenomenon since altered membrane characteristics appear to be a major means by which organisms control their biochemistry. Oaks and Bidwell (1970), Maroudas (1975) and Urban et al (1976) have already demonstrated that glucose i.e. sugar preferably penetrates the annulus fibrosus. When flavonoids are carrying the sugars and when they are easily permeable and soluble in water, the rich
collection of flavonoids in recipe i.e. Ayurvedic drug administered here certainly must be contributing to the fluid transport across the membrane of the intervertebral disc and help maintaining osmotic pressure.

When we talk of the osteophytes which is formed by wearing of the disc and protrusion of the nucleus pulposes certainly some important elemental balance such as calcium and phosphorus must be disturbed. Several flavonoids are known to possess metal chelating properties. And they are also known as best antioxidants. For example, prevention of oxidation of Vit C (ascorbic acid) is brought out by flavonoids. The calcium transport is mainly governed by Vit D and most vitamins work as coenzyme or prostatic groups. Therefore their coupling with the enzyme keeps the enzyme’s active site open for which these vitamins must maintain their functional activity or in other words should prevent from oxidation. It is the flavonoids which play crucial role at this juncture. For example, both quercetin, myrecitin-3-glucosides are known significant anti-oxidants. And their antioxidant effect is attributed to their chelation property of metallic ions by accepting free radicals (Pratt and Watt, 1964). These flavonoids are predominantly found in the drug used here. There is already a report that disc tissue cells contain lysozomes which produce enzymes. They act as a catalyst in tissue metabolism. They not only partake in depolymerisation but also synthatization (Pearsen et al. 1972). This reflects the active metabolic state of the disc. Although anti-oxidant effect of chelation of metal ions and reduction of free radical has been attributed to flavonoids it is also known to inhibit enzymes. For instance, the flavonoids react with phenolase. The product may inhibit enzyme by nonspecific binding to the enzymes. It may also compete or react with the
substrate by oxidation of sulphahydrate group controlling tertiary enzyme
structure or through complexing metallic prostatic group (Rich 1969).

Several workers have added flavonoids to isolate enzyme system. For instance, addition of 1 to 4 μM. Malvidin 3-glucoside inhibits malate dehydrogenase and glutamic decarboxylase. These and many other observations lead us to infer that inhibition of oxidative enzymes may help some of the active vitamins to function effectively. The fact that they are able to remove free radicals is in itself of great importance for these free radicals are known damagers of tissue.

While recording the net results of the treatment, the criterias have been fixed, both symptomatic as well as radiological. Based on that the assessment of the result is made from the table 6.7. This clearly reflects that maximum number of patients who have suffered from the ailment i.e. 95 out of 112 fell into the category of best and rest of them for one or the other reason in the very good. This clearly shows, these recipies directly meet all the requirement of recovery discussed at length earlier. And, therefore, we may conclude that it is the best remedy in the age of unabated increase of ailment in the population.
C. Statistical Data:

Table 6.1: Showing number of patients undergone the treatment.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of patients examined</td>
<td>152</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients not completing treatment</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>112</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.2: Showing Sexwise classification of patients who have completed the treatment.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>36</td>
<td>76</td>
<td>112</td>
</tr>
<tr>
<td>%</td>
<td>32.14%</td>
<td>67.86%</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.3: Showing Agewise classification of patients who have completed the treatment.

<table>
<thead>
<tr>
<th>Age</th>
<th>M</th>
<th>%</th>
<th>F</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-20</td>
<td></td>
<td>-</td>
<td>01</td>
<td>0.89</td>
<td>01</td>
<td>0.89</td>
</tr>
<tr>
<td>21-30</td>
<td>02</td>
<td>1.78</td>
<td>09</td>
<td>8.03</td>
<td>11</td>
<td>9.82</td>
</tr>
<tr>
<td>31-40</td>
<td>11</td>
<td>9.82</td>
<td>20</td>
<td>17.85</td>
<td>31</td>
<td>27.62</td>
</tr>
<tr>
<td>41-50</td>
<td>14</td>
<td>12.50</td>
<td>25</td>
<td>27.32</td>
<td>39</td>
<td>34.82</td>
</tr>
<tr>
<td>51-60</td>
<td>08</td>
<td>7.14</td>
<td>12</td>
<td>10.71</td>
<td>20</td>
<td>17.85</td>
</tr>
<tr>
<td>61-70</td>
<td>01</td>
<td>0.89</td>
<td>06</td>
<td>5.35</td>
<td>07</td>
<td>6.25</td>
</tr>
<tr>
<td>71 and above</td>
<td>-</td>
<td>-</td>
<td>03</td>
<td>2.67</td>
<td>03</td>
<td>2.67</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>32.14</td>
<td>76</td>
<td>67.86</td>
<td>112</td>
<td>100.00</td>
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</table>
Table 6.4  Showing Occupationwise classification of patients

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying weight on head/back</td>
<td>-</td>
<td>-</td>
<td>01</td>
<td>0.89</td>
</tr>
<tr>
<td>Sriting for longer period</td>
<td>16</td>
<td>14.88</td>
<td>12</td>
<td>10.71</td>
</tr>
<tr>
<td>Looking down for longer period</td>
<td>05</td>
<td>4.46</td>
<td>04</td>
<td>3.57</td>
</tr>
<tr>
<td>Computer clerks/other</td>
<td>15</td>
<td>13.39</td>
<td>06</td>
<td>5.35</td>
</tr>
<tr>
<td>Housewives</td>
<td>-</td>
<td>-</td>
<td>53</td>
<td>47.32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>36</td>
<td>76</td>
<td>112</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 6.5  Showing Weightwise classification of patients

<table>
<thead>
<tr>
<th>Wt. in kg</th>
<th>M</th>
<th>F</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 40</td>
<td>-</td>
<td>02</td>
<td>02</td>
</tr>
<tr>
<td>41-60</td>
<td>07</td>
<td>47</td>
<td>54</td>
</tr>
<tr>
<td>61-80</td>
<td>29</td>
<td>27</td>
<td>56</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>36</td>
<td>76</td>
<td>112</td>
</tr>
</tbody>
</table>

Table 6.6  Classification based on position of syndrome.

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical Disc Syndrome</td>
<td>32</td>
<td>61</td>
<td>93</td>
<td>83.07</td>
</tr>
<tr>
<td>Lumbar Disc Syndrome</td>
<td>4</td>
<td>15</td>
<td>19</td>
<td>16.96</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>36</td>
<td>76</td>
<td>112</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 6.7 showing various responses of patients and categorization based on criteria

Criteria of the Results:

i) Best Results - above 75%
ii) Very Good results - 50 - 75%
iii) Good results - 25 - 50%
iv) No results - Below 25%

<table>
<thead>
<tr>
<th>Results</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Results</td>
<td>29 (25.89%)</td>
<td>66 (58.92%)</td>
<td>95 (84.83%)</td>
</tr>
<tr>
<td>Very Good Results</td>
<td>07 (0.62%)</td>
<td>10 (0.89%)</td>
<td>17 (15.17%)</td>
</tr>
<tr>
<td>Good Results</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>36 (32.14%)</td>
<td>76 (67.85%)</td>
<td>112 (100%)</td>
</tr>
</tbody>
</table>

Table 6.8 Showing follow-up studies after receiving treatments of Shwadanstitradi Guggul and Padmak Kitta yog.

<table>
<thead>
<tr>
<th>Period of treatment</th>
<th>Patients examined months after treatment</th>
<th>No.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 weeks</td>
<td>6 months</td>
<td>09</td>
<td>No recurrance</td>
</tr>
<tr>
<td></td>
<td>12 months</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 months</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 months</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 months</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>36 months</td>
<td>06</td>
<td>No recurrance</td>
</tr>
<tr>
<td></td>
<td>Not reported</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>
D. The Discussion based on Ayurvedic principles:

1. Use of Swandamsatrādi Guggul and its Role:

According to Ayurveda, following are the causes of cervical syndrome: (1) Manyāstambha, (2) Asthikshaya. The former i.e. manyāstambha does not sound to be causitive, but effective. In other words when the ailment is manifested we see the manyāstambha. The causes as per Ayurvedic principle are mainly (1) Asthyāvrittamātaka (2) Kaphāvrittamātra (3) Kaphāvrittamātrana (4) Kaphāvrittamātrana. These are clearly going to show that they are based on Pancamahābhuta. When the movements of vāta are constrained due to Asthi, the essential movement of vāta is restricted. This is likely to cause the essential communication within the Pancamahābhuta required for the metabolic activities. This may also originate due to excessive unusual movements in the spine region beyond the required posture. Alternatively it may also originate by anxiety, stress and exertion. Professional hazards also contribute in accentuating the situation or restricting movement of vāta.

This disturbance in the co-ordination of main three basic factors i.e. Vāta Pitta and Kapha symptomatically indicates Manyāstambha i.e. stiffening of the neck. And this may subsequently invite restriction in the movement of the fluid in the disc. According to Ayurveda Kurchā or disc is classified as a part of Asthi. In other words according to Ayurvedic principles, Asthi comes under Prithvi and which is a solid state as per the physical science. If we go to the root the of modern existing physical science the entire formation of a solid starts with the state gaseous to plasma to solid. In other words there is a full communication between three, vis-a-vis in the
the Ayurvedic principles which believes that it starts from Ākāsa - Vāyu - Agni - Āpa - Prithvi. Under the light of this we look into the intervertebral disc as a part of Asthi, but in a plasmatic state. As discussed earlier the disc consists of large number of different types of living tissues which need continuous bathing with a fluid carrying large number of metabolites. We may say that because of this state of disc it works like a lever in the movement of two vertebrae. Its hydration state has to be maintained in order to facilitate the movements of the vertebrae. Another causitive reason i.e. Asthikshaya given to explain this syndrome is perfectly based on wearing of the disc, for in Ayurveda disc is classified under Asthi albeit, it is softer than the bone. It may be regarded as a previous state of Asthi, a sort of a thick plasmatic fluid state. This state has to be maintained to facilitate the smoother movements of the spine and hence body maintains the state of the disc.

We have already discussed earlier that according to the modern science the ailment develops due to the restricted movement of the fluid or dehydration. This according to Ayurveda is considered as Asthikshaya because replenishing of wearing parts is effected by Kapha. It is more appropriate therefore, to regard the Asthikshaya which is the root cause of the trouble rather than manyastambha alone; may be that, one is the cause; another is the effect i.e. Asthiksaya is a cause and Manyāstambha is an effect.

The very Ayurvedic principles which emphasise on Panca-mahābhuta and Tridosha are able to explain the diagnosis and treatment of the ailment. While conocting Ayurvedic medicine, properties of the medicinal principles of different plants as to how they are effective and are
able to act on different diseases are taken into consideration. E.g. in the Goksurādi guggul which is used to treat the ailment number of plants Goksur, Sunthi, Marica Pippali, Haritaki, Bibhitak, Āmalaki, Mustā, Guggul are used. According to Āyurvedic Ācaryas this recipe works on Prameha, Mutrakricchas, Pradara Mutrāghat, Vāṭarakta, Vāṭaroga, Viryaroga and Aśmāri. These mechanisms of action are derived from properties of different plants whose nature and target over which it is able to act has been listed and already been given in the table (6.8). The mechanism of action which is given above is going to tell us the metabolic state of different organs being set properly by this recipe, which is also essential. While treating any ailment one has to find out the causative reasons. Sometimes the roots of any ailment are hidden elsewhere. Under such circumstances, treating directly on the ailment does not work. Ayurveda therefore firmly believes that all other key metabolic activities must be stabilised and must be set at their proper place before one treats the ailment. According to Āyurveda, e.g. the simple ailment of the Kapha, Kāsa or chest congestion, is caused due to disorder of Āmaśāya, vis-a-vis in modern science, for the heart trouble, kidney functioning is set right.

As explained above Gokshuradi guggul is able to take care of Prameha, Mutrakricchra etc., but it is not able to act or weakly acts on Asthikṣaya vyadhi in which the spondylosis falls.

As explained earlier according to Āyurveda the causative reason is the Apāna-duṣṭi is seen first, whose origin is below Nābhi. This subsequently affects Samāna, Udāna, prana and Vyāna. Eventually it affects the Asthidhātu. Now the problem is, why it is localised in these two regions - lumbar and cervical. According to Sushruta the Sthānsamsraya
of dosa occur where there is Kha-vaigunya. In the present context obviously, due to excessive movements there is already Kha-vaigunya and hence these organs are prone for the ailment.

Goksuradi guggul is known to work only on diseases caused by Apana-dusti. If the property of those plants or plant organs which can work even beyond that it can be derived into this which needs modification. According to Vd. Atmaramshastri, Datar, Yavasã and Pashanbheda are to be added to Gokshuradi guggul to prepare Swadnastradi guggul. Synergestic properties in tandem with other plant ingredients used in the above recipe, can be made to act even on spondylosis. These two plants Yavasã and Pashanbheda have respectively the Dravyaguna - (1) Rasa : Kashya Tikta, Madhur katu (2) Veerya : Usna (3) Vipäka : Madhura, (4) Samanya guna : Laghu, Snigdha and (5) Visesa guna : Trishñã nigraha, Arsogha, Ashmaribhedan and (1) Rasa: Kasãya Tikta, (2) Veerya : Sêeta, (3) Vipäka: Katu, (4) Samanya Guna : Laghu, Snigdha, Tikna, and (5) Visesaguna: Mutravireceniya, Asmaribhedan. He envisaged the increase in the efficacy of the drug by way of Anulomana of Apana i.e. restoration of the free movements of Vãyus and thereby reducing the localised undesirable effects. It can be noted that in the preparation of swadamsradi guggul the amount of Kasãya used is much more than the regular one, because of which the Apadhãtu of the body i.e. the body hydration is increased. Obviously looking into the present context this certainly has an effect for maintaining fluid transport and even the desirable osmotic concentration of the fluid of the disc. Possibly because of this there is restoration of original state of disc.
2. The use of Padmaka Kitta Yoga and its role:

While discussing the role and mechanism of action of the recipe shwadastradi guggul to cure spondylosis we have made the reference of Tridośa, Pancamahābhuta and their balance. It has also been mentioned that free movement of vāyu must be restored before accomplishing the recovery in the Asthi. Similarly it is also necessary that patient must have a balance in his body between the Dhātus i.e. Rasa, Rakta, Manasa, Meda, Asthi, Mājjā and Sūkra. And in Āyurveda this has also been given a paramount importance. It is evident that along with the Swadanstrādi guggul Mandoor Bhasma is also administered. In Āyurveda this metallic entity is given a great importance and also a great significance. Its properties have been explained in Rasa Cāndānsū. The following shloka is self explanatory.

(Rasa Cāndānsū 539)

This means, it has a property of acting upon inflammation increase the blood and effectively act upon any ailment which affects the regeneration of blood in the body. It is needless to explain here that the regeneration of blood takes place in the liver i.e. liver plays a very important role in keeping the balance of the body.

It is necessary to mention here that along with Mandoor Bhasma the Padmakastha is also given mixed. As given earlier in the table 6.8. According to Āyurveda this drug has following qualities: Ras: Kasaya,
tikta, Veerya: Sheeta, Vipāka: Katu, Samānya Guna: Laghu and Vīseṣa gunadharma: Vedānāsthāpan and Vamya. It means it is a known pain killer. In other words it has an ability to reduce the pains. The greatest symptomatology of the ailment is the pain. Even the orthopaedic experts emphasize that reduction in the pain in itself needs a credit point of 50% recovery. The fact that it is administered with Mandoor means, on one side, the formation of Ras Rakta Mamsa is promoted and on the other side Padmakāshta facilitates regeneration of the bone or disc for, according to Ayurveda it is regarded sugandhi, meaning parthiv, and hence, it increases parthiva gunadharma of body.

The cervical disc which is called Kurčā and in Ayurveda it is referred to as Sarakta Meda. In other words, it is a part of bone marrow. It is a well documented fact that Mandoor directly acts upon it.

When we say that it increases the regeneration of blood by directly acting upon liver, meaning it has an ability to correct liver disorder. In body blood cells are suspended in the serum, which is a fluid. It has tremendous potential or ability of communication and maintenance of body water balance. By promoting regeneration of blood and removing any constraints in its way the metabolic activity of the body is well maintained which is essential for any patient before one responds to any drug. We do not find that there can be any medicine or tonic which is prescribed for blood regeneration as efficacious and effective as mandoor bhasma of Ayurveda.

In the course of discussion it has been mentioned that the scientific investigation of the cause of spondylosis and the remedial measures to be
taken, carried out by the expert scientist abroad clearly, emphasises on the
inflow of fluid in the disc, transport of essential elements, the water and the
evendual hydrostatic force to be maintained to keep the disc line at its
place, so that, it can facilitate the easy movement of the vertebrae. Under
the light of this the etiology of the disease, as per the science of Ayurveda,
and the approach to effectively control and cure the ailment appears to be
the only way rather than treating the patient symptomatically and
recommend temporary external measures where by one may get a
transitory pleasure and apparent relief of the pains. We may say that this
postponement may continuously keep the patient in a sort of a hangover
and provide transient mental peace but eventually aggravate the situation.