

# ANALYSIS THE IMPROVEMENTS OF THE QUALITY OF LIFE IN AYURVEDIC TREATMENT FOR THE WRIST FRACTURE

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## ABSTRACT

**Aims:** The aim of this study was to analyze the improvements of the quality of life (QOL) in Ayurvedic treatment for the wrist fracture.

**Study design:** This is a Retrospective Cohort Study.

**Place and duration of study:** This study was conducted among the wrist fracture patients in Kadum bidum (orthopedic) clinic who were come to the hospital for treatment of wrist fracture at Bandaranayaks Memorial Ayurvedic Research Institute (BMARI).

**Methodology:** All wrist fracture patients who were come to Kadum bidum (orthopedic) clinic at BMIRI were select for this research study and interview administrated questionnaire was used to collect the data. Wrist fracture patients divided into three groups (A, B, C). QOL analyzed in the first visit, after the 6th week, after 3 months, and after the 6th month.

**Results:** In group A, they were getting quick improvement seen within 3months. QOL score changes from 16, 39, and 55. In group B, QOL score of patients who were getting treatment for 6th weeks QOL score changes from 18, 38.5. QOL score of patients who were getting treatment for 6 months QOL score change from 17, 26, 35, and 43. In group C, QOL score of patients who were getting treatment for 3month QOL score changes from 21, 31.5, and 42.5. QOL score of patients who were getting treatment for 6 months QOL changes from 17, 24, 35 and 41.

**Conclusion:** According to the study patients were quickly improved by Ayurvedic treatment. So Ayurvedic treatment of fracture management is very effective.

Key words: Quality Of Life, Wrist Fracture, Bhagna, Ayurvedic treatment

## 32 1. INTRODUCTION

### 33 1.1 Background of study

34 Ayurvedic medicine is a system of healing that originated in ancient India. The goal of Ayurveda is  
35 prevention as well as the promotion of the body's own capacity for maintenance and balance[15]. A bone  
36 fracture is a medical condition in which there is damage in continuity of the bone. A bone fracture can  
37 be the result of high force impact or stress or minimal trauma injury as a result of certain medical  
38 conditions that weaken the bones such as osteoporosis, bone cancer or osteogenesis imperfect[1].

39 Fragility fractures are common, 1 in 2 women over 50 years of age will suffer one, as will 1 in 5 men.  
40 Globally during the year 2000, there were estimated 9 million new fragility fractures, of which 1.6million  
41 were at the hip, 1.7million at the wrist, 0.7million at the humerus and 1.4million symptomatic vertebral  
42 fractures [13].

43 A wrist fracture is one of the common fractures.A wrist fracture is a medical term for a broken wrist. The  
44 wrist is made up of eight small bones which connect with the two long forearm bones called the radius  
45 and ulna. Although a broken wrist can happen in any of these 10 bones, by far the most common bone to  
46 break is the radius. This is called as a distal radius fracture by hand surgeons [1]. One of the most  
47 common distal radius fractures is a Colles fracture. It causes a much loss of quality of life both acute loss,  
48 immediately after the fracture & chronic loss because of recurrent fractures & disability due to incomplete  
49 recovery [1].

50 Quality of life (QOL) is the general well-being of individuals and societies, outlining negative and positive  
51 features of life. It observes life satisfaction, including everything from physical health, family, education,  
52 employment, wealth, religious beliefs, finance, and the environment. Several instruments have been  
53 developed for the assessment of the quality of life after wrist fracture. International Osteoporosis  
54 Foundation (IOF) developed a specific questionnaire for quality of life patients with wrist fracture [14].

55 The Ayurvedic term for fracture is Bhagna [7]. In Ayurveda, bone fractures were classified into two types  
56 "dislocation (Sandhimukta) and fracture (Kandabhagna)". Ayurveda offers effective treatment for rejoining  
57 bones and restoring them to their original form and strength. Generally, bone being a living tissue,  
58 constantly builds and hence rejoins and nourishes. The three fundamental principles of fracture treatment  
59 are Bhagna Sthapana (Reduction), Bhagna Sthirikara (Immobilization), Punah cheshta prasara (Rehabilit  
60 ation). In Ayurveda one of the important immobilization methods is bandaging for fracture. It classify into  
61 15 types. Commonly spiral bandaging (anuvellita) is used to bandage around upper and lower limbs [4].

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65 **1.1 Justification**

66 Many numbers of patients are visiting for the Ayurveda hospitals for the fracture treatment. Evaluate the  
67 fracture healing effectiveness of Ayurvedic treatment is essentially important to identify the treatment is  
68 successful or not, So we did the study to analyze the wrist fracture healing effectiveness who came just  
69 for the Ayurvedic treatment, who came getting after the western treatment and who came getting  
70 traditional treatment.

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72 **2. PRIMARY & SECONDARY OBJECTIVES**

73 **Aim**

74 To analysis the improvements of the quality of life in Ayurvedic treatment for the wrist fracture.

75 **Objectives**

- 76 ➤ To analysis the quality of life to wrist fracture patients who took ayurvedic treatment straightly(A)  
77 ➤ To analysis the quality of life to wrist fracture patients who took ayurvedic treatment after getting  
78 western treatment(B)  
79 ➤ To analysis the quality of life to wrist fracture patients who took ayurvedic treatment after getting  
80 alternative treatment(C)

81

82 **3. MATERIALS AND METHODOS**

83 **3.1 Study design & area**

84 This is a Retrospective cohort Study. This study was conduct among wrist fracture patients  
85 in *Kadum bidum* clinic who came to the hospital for treatment of wrist fracture at  
86 Bandaranayaks Memorial Ayurvedic Research Institute.

87 **3.2 Research Instruments:**

88 Structured Interview administrated Questionnaire prepared based on Specific objectives.  
89 Questionnaire for the research was prepared and checked by the Supervisor.

90 **3.3 Main study**

91 The research proposal was prepared and approval was taken from the Supervisor.

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94 **3.4 Data collection**

95 Data was collected with the help of the interview administrated questionnaire from the *Kadum*  
96 *bidum* clinic patients who were affected by wrist fracture in order to do the main research.

97 **3.5 Data Analysis**

98 The data was tabled and analyzed using simple statistics as the next step of the research.  
99 The matters collected from the revised literature also analyzed in addition to the result of the  
100 research. The research report was prepared after the research results were achieved.

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102 **4. LITERATURE REVIEW**

103 **4.1 Fracture**

104 A fracture may be a complete break in the continuity of a bone or it may be an incomplete break  
105 or crack.

106 Classification 1 - According to their etiology into 3 groups.

- 107 1. Fractures caused solely by sudden injury  
108 2. Fatigue or stress fractures  
109 3. Pathological fractures

110 Classification 2 - According to the pattern of fracture

111 Fractures are often designed by descriptive terms denoting the shape or pattern of the fracture surface as  
112 seen on radiographs. It may indicate the nature of causative violence & may thus give a clue to the  
113 easiest method of reduction

- 114 1. Transverse fracture  
115 2. Oblique fracture  
116 3. Spiral fracture  
117 4. Comminuted fracture(with more than fragments)  
118 5. Compression / Crush fractures  
119 6. Greenstick fracture (incomplete breaks occurring only in the resilient bone of children)  
120 7. Impacted fractures

121 Classification 3 - According to the soft tissue involvement

- 122 1. Closed fracture: are those in which they overlying skin is intact.

- 123 2. Open fracture / Compound fracture: involve wounds that communicate with the fracture, or where  
124 fracture hematoma is exposed, and may thus expose bone to contamination. Open injuries carry  
125 a higher risk of infection.  
126 3. Clean fracture  
127 4. Contaminated fractures[1].

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## 129 **Symptoms of bone fracture**

130 The signs and symptoms of a fracture vary according to which bone is affected, the patient's age and  
131 general health, as well as the severity of the injury.

- 132 • Pain
- 133 • Swelling
- 134 • Bruising
- 135 • Discolored skin around the affected area
- 136 • Angulation - the affected area may be bent at an unusual angle
- 137 • The patient cannot move the affected area
- 138 • The affected bone or joint may have a grating sensation[1][11]

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### 140 a. **Wrist fracture**

141 A wrist fracture is a medical term for a broken wrist. The wrist is made up of eight small bones which  
142 connect with the two long forearm bones called the radius and ulna. Although a broken wrist can happen  
143 in any of these 10 bones, by far the most common bone to break is the radius. This is called a distal  
144 radius fracture by hand surgeons[1].

### 145 **Distal Radius Fractures (Broken Wrist)**

146 The radius is the larger of the two bones of the forearm. The end toward the wrist is called the distal end.  
147 A fracture of the distal radius occurs when the area of the radius near the wrist breaks.

148 Distal radius fractures are very common. In fact, the radius is the most commonly broken bone in the  
149 arm[1].

### 150 **Description**

151 A distal radius fracture almost always occurs about 1 inch from the end of the bone. The break can occur  
152 in many different ways, however.

153 One of the most common distal radius fractures is a Colles fracture, in which the broken fragment of the  
154 radius tilts upward. This fracture was first described in 1814 by an Irish surgeon and anatomist, Abraham  
155 Colles, hence the name Colles fracture.

156 Other ways the distal radius can break include:

157 **Intra-articular fracture:** A fracture that extends into the wrist joint. (Articular means joint.)

158 **Extra-articular fracture:** A fracture that does not extend into the joint is called an extra-articular fracture.

159 **Open fracture:** When a fractured bone breaks the skin, it is called an open fracture. These types of  
160 fractures require immediate medical attention because of the risk for infection.

161 **Comminuted fracture:** When a bone is broken into more than two pieces, it is called a comminuted  
162 fracture.

163 It is important to classify the type of fracture because some fractures are more difficult to treat than  
164 others. Intra-articular fractures, open fractures, comminuted fractures, and displaced fractures are more  
165 difficult to treat, for example.

166 Sometimes, the other bone of the forearm (the ulna) is also broken. This is called a distal ulna  
167 fracture[1][11].

## 168 **Cause**

169 The most common cause of a distal radius fracture is a fall onto an outstretched arm.

170 Osteoporosis can make a relatively minor fall result in a broken wrist. Many distal radius fractures in  
171 people older than 60 years of age are caused by a fall from a standing position. A broken wrist can  
172 happen even in healthy bones, if the force of the trauma is severe enough[1][11].

## 173 **Symptoms**

174 A broken wrist usually causes immediate pain, tenderness, bruising and swelling. In many cases, the  
175 wrist hangs in an odd or bent way (deformity)

## 176 **Complications of a bone fracture**

- 177 1. Heals in the wrong position - this is known as a malunion either the fracture heals in the wrong  
178 position or it shifts (the fracture itself shifts).
- 179 2. Disruption of bone growth - if a childhood bone fracture affects both ends of bones, there is a risk  
180 that the normal development of that bone may be affected, raising the risk of a subsequent  
181 deformity.
- 182 3. Persistent bone or bone marrow infection - if there is a break in the skin, as may happen with a  
183 compound fracture, bacteria can get in and infect the bone or bone marrow, which can become a

184 persistent infection. Patients may need to be hospitalized and treated with antibiotics. Sometimes  
185 surgical drainage and curettage is required.

186 4. Bone death (avascular necrosis) - if the bone loses its essential supply of blood it may die[1][11].

## 187 **Prevention of bone fractures**

188 Nutrition and sunlight - the human body needs adequate supplies of calcium for healthy bones. Milk,  
189 cheese, yoghurt and dark green leafy vegetables are good sources of calcium.

190 Our body needs vitamin D to absorb calcium - exposure to sunlight, as well as eating eggs and oily fish  
191 are good ways of getting vitamin D.

192 Physical activity - the more weight-bearing exercises you do, the stronger and denser your bones will be.  
193 Examples include skipping, walking, running, and dancing - any exercise where the body pulls on the  
194 skeleton.

195 Older age not only results in weaker bones but often in less physical activity, which further increases the  
196 risk of even weaker bones. It is important for people of all ages to stay physically active.

197 The (female) menopause - estrogen, which regulates a woman's calcium, starts to drop and continues to  
198 do so until after the menopause, levels never come back up to pre-menopausal levels. In other words,  
199 calcium regulation is much more difficult after the menopause. Consequently, women need to be  
200 especially careful about the density and strength of their bones during and after the menopause.

201 The following steps may help reduce post-menopausal osteoporosis risk:

- 202 • Do several short weight-bearing exercise sessions each week
- 203 • Consume only moderate quantities of alcohol, or don't drink it
- 204 • Make sure you get adequate exposure to daylight Make sure your diet has plenty of calcium-rich  
205 foods. For those who find this difficult, talk to your doctor about taking calcium  
206 supplements[1][11].

## 207 **4.2 Kandabhagna**

208 In Ayurveda Bone fractures are classified into two types dislocation (*Sandhimukta*) and fracture  
209 (*Kandabhagna*). The types of fractures are:

- 210 1. *Karkataka*: Two ends of the shaft bent, swelling over the fracture in the middle
- 211 2. *Asvakarana*: Fractured ends in angular deformity.
- 212 3. *Curnita*: Fracture comminuted with crepitus.
- 213 4. *Piccita*: Fracture site crushed with several swelling.
- 214 5. *Asthichalita*: one fractured end displaced downwards and the other end sideways.
- 215 6. *Kandabhagna*: Fractured ends free & move on vibrating.

- 216 7. *Majjanugata*: One fractured end impacted into the marrow cavity of the other with exudation of  
217 marrow.
- 218 8. *Atipatita*: Fractured end droops( eg; jaw)
- 219 9. *Vakra*: Bone is bent, not completely fractured (greenstick)
- 220 10. *Chinna*: One surface fractured, the other surface of the bone intact.
- 221 11. *Patitam*: Large number of small penetrating wounds on the bone with severe pain.
- 222 12. *Sphutita*: Bone cracked, swollen and painful; feels as if it contains the bristles of  
223 an insect[5][6][12].

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### 225 4.3 Treatment

226 The three fundamental principles of fracture treatment are

- 227 i *Bhagna Sthapana* (Reduction)
- 228 ii *Bhagna Sthirikara* (Immobilisation)
- 229 iii *Punah cheshta prasara* (Rehabilitation)

230 As soon as the fracture is diagnosed steps should be taken to reduce the fracture. Delayed reduction  
231 may result in delayed union or non-union and the displaced fragment may cause nerve damage or  
232 disturbance of circulation. For reduction of a fracture, certain manipulations are necessary .Manipulation  
233 is usually done as a therapeutic measure. But when it is performed with skill and understanding, it  
234 acquires a diagnostic function in assessing the stability of a fracture which in turn may govern the choice  
235 of treatment. The aim of reduction is to reduce the space between fragments and to place in original  
236 position[5][6][7][12].

237 The correct repositioning of the displaced bone are achieved raising the depressed fragment, pressing  
238 down the elevated, pulling and straightening when one end is overlapping the other. The basic  
239 procedures in treating a fracture are traction (*ancana*) Compression (*Peedana*) immobilization  
240 (*Samkshepa*) and bandage (*bandha*) Once a joint or fracture is reset and the deformity corrected , it  
241 regains its normal state by healing which is facilitated by rest and cold irrigation, medicinal plaster and  
242 dressings with linen soaked in medicated oils and splints. During olden days splints were used for  
243 immobilization[5][6][8][12].

244 The barks of the following trees were found to be useful. .

245 *Madhuca longifolia*

246 *Ficus glomerulata*

247 *Ficus religiosa*



248 *Butea frondosa*  
249 *Terminalia arjuna*  
250 *Bambusa bambos*  
251 *Terminalia tomentosa*  
252 *Ficus bengalensis*

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## 254 **Bandages**

255 Bandages are indispensable in the treatment of fractures. Bandages are usually done to hold the splints  
256 and dressings in position its main uses are

- 257 • to stop bleeding by pressure
- 258 • to give rest and support
- 259 • to retain dressings and splints in position
- 260 • to prevent edema
- 261 • to correct deformity

262 Types of bandages are

- 263 • Sheath (*kosa*) Around thumb and fingers
- 264 • Long roll (*dama*) Sling around straight parts of small width
- 265 • Cross – like (*svastika*) Spica around joints
- 266 • Spiral (*anuvellita*) Around upper and lower limbs
- 267 • Winding (*mutoli*) Circular around neck penis
- 268 • Ring (*mandala*) Circular around stumps
- 269 • Betel box type (*sthagika*) Amputation stumps tip of penis or fingers
- 270 • Two tailed (*yamaka*) Around limbs to treat ulcers
- 271 • Four-tailed (*khatva*) For jaw, cheeks, temples
- 272 • Ribbon-like (*cina*) Outer angles of eyes: temples
- 273 • Loosely knotted Over back abdomen & chest
- 274 • Noose like (*vibantha*)
- 275 • Canopy like Protective cover over head wound
- 276 • Cow horn (*gosphana*) Over chin, nose, lips, ano-rectal region
- 277 • Five tailed (*pancangi*) Head and neck above the level of clavicles

278 Acharyas have mentioned the rules of bandaging very scientifically. It should not be neither too tight nor  
279 too loose. Tightness can lead to swelling pain, blebs and too loose a bandage can never give the desired

280 stability of the fractured fragments. Like vise bandaging should be done in the interval of three, (hot  
281 Season) five (Normal season) or seven days (Cold season) depending upon the climatic  
282 conditions[5][6][9][12].

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#### 285 **Immobilization techniques in Ayurveda**

286 There are enough evidence to prove that Susrutha and his followers had profound knowledge on  
287 immobilization techniques. One of the application mentioned in Bhaishajya ratnavally is panka pradeha.  
288 It means application of mud around the fracture site. Most probably it could be analogous with plaster of  
289 paris which we practise today. Another type of immobilisation techniques which is very prevalent in  
290 Kerala and adjoining states are a combination of white of egg, Black gram powder and cloth[5][6][12]

#### 291 **Rehabilitation**

292 The first objective of rehabilitation is to eliminate the physical disability to the greatest extend possible  
293 second to alleviate or to reduce the disability to maximum possible level and third to train the person with  
294 residual physical disability to work and live within the limits of disability but to the hilt of his capabilities  
295 Significance of the principles of rehabilitation was known to ayurvedic Acharyas. Susrutha has instructed  
296 the patient of fracture carpal bone to bear weight in increasing order as the fracture healing progress. He  
297 instruct the patient to bear the bolus of mud and then rock salt and later Pashana[5][6][12].

#### 298 **4.4 Prognosis**

299 The treatment of curnita, chinna, atipatita and majjanugata type of fractures are difficult to heal.  
300 Dislocations of joints in children, elderly and debilitated individuals are also difficult to try

301 The treatment of fractures and joint injuries is difficult in patients who eat too little, who lack self – control  
302 to comply with instruction and those with vitaja constitution. The treatment is easy and successful in youth  
303 in the absence of dosa perturbation and in cold weather condition. The stability of a joint which takes a  
304 month in youth may require twice as long in middle age and thrice in old age[5][6].

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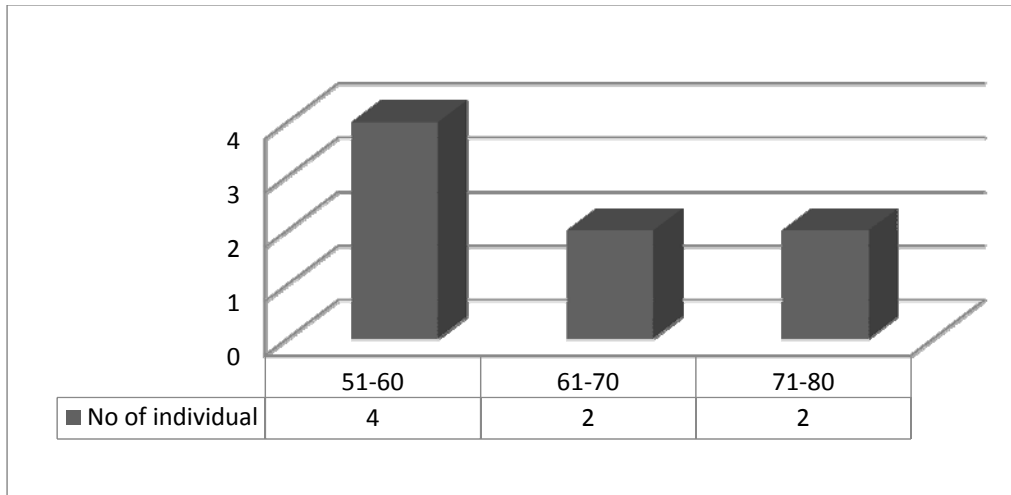
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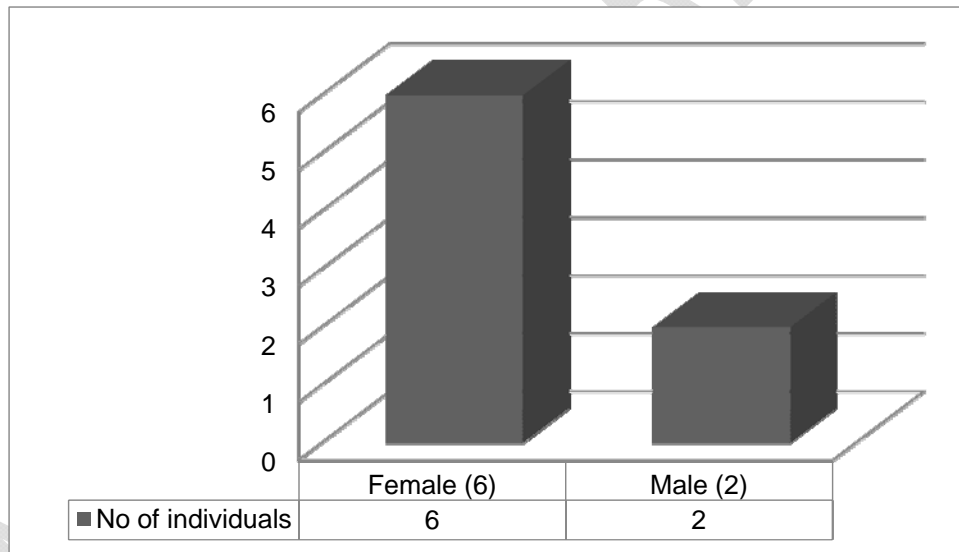
310 **5. RESULT AND DISCUSSION**



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312 **Fig 1 Details of wrist fracture patients' age**

313 Out of 8 wrist fracture patients, 4 patients are in age of 51yrs to 60 yrs. 2 patients are in age of 61yrs to  
314 70yrs and 2patients are in 71yrs to 80 yrs.

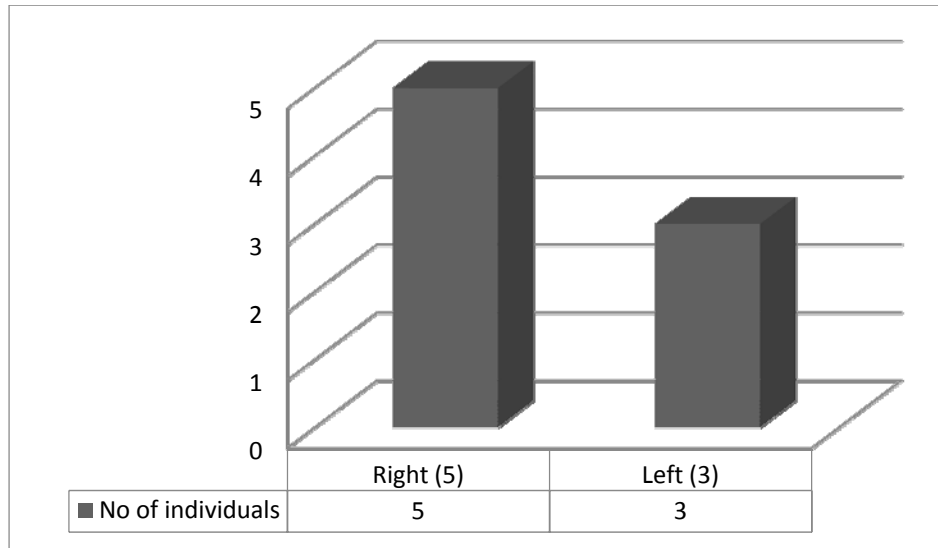


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317 **Fig 2: Details of wrist fracture patients' sex**

318 Out of 8 wrist fracture patients, 6patients are female and 2 patients are male.



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320 **Fig 3 Details of fracture side**

321 Out of 8 wrist fracture patients, 5 patients have right hand wrist fracture and 3 patients have left hand  
322 wrist fracture.

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338 **DATA CLASSIFIED WITH CATEGORY (MAXIMUM SCORE), 1<sup>ST</sup> DAY QOL SCORE, AFTER**  
339 **6<sup>TH</sup> WEEK QOL SCORE, AFTER 3MONTH QOL SCORE, AFTER 6<sup>TH</sup> MONTH QOL SCORE**  
340 **AND P-VALUE.**

341 **Table 1 Group A (Analysis the quality of life to wrist fracture patients who took ayurvedic**  
342 **treatment straightly)**

<b>Category (Maximum score)</b>	<b>1<sup>st</sup> day</b>	<b>6<sup>th</sup> week</b>	<b>3month</b>	<b>Probability value</b>
Total IOfQOL score(60)	16	39	55	<i>P&lt;0.05</i>
Pain	1	3	5	<i>P&lt;0.05</i>
Numbness	5	5	5	<i>P&lt;0.05</i>
Stiffness	1	3	4	<i>P&lt;0.05</i>
Deformity	1	3	4	<i>P&lt;0.05</i>
Wash or dry hair	1	3	5	<i>P&lt;0.05</i>
Turn a door	1	3	4	<i>P&lt;0.05</i>
Problems with doing works	1	3	4	<i>P&lt;0.05</i>
Writing	1	3	5	<i>P&lt;0.05</i>
Transport	1	3	5	<i>P&lt;0.05</i>
Activities	1	3	4	<i>P&lt;0.05</i>
Need help	1	4	5	<i>P&lt;0.05</i>
QOL	1	3	5	<i>P&lt;0.05</i>

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344 Total maximum QOL score is 110, 1<sup>st</sup> Day QOL score is 16, after 6<sup>th</sup> week QOL score is 39 and after  
345 3month QOL score is 55. Therefore improvement is significant.

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354 **Table 2 Group B (Analysis the quality of life to wrist fracture patients who took ayurvedic**  
355 **treatment after getting western treatment)**

356 **a. Analysis the QOL in two patients who were got treatment for 6<sup>th</sup> weeks**

	1 <sup>st</sup> day	6 <sup>th</sup> week	Probability value
Total IOFQOL score(60)	18	38.5	<i>P</i> <0.05
Pain	1.5	3.5	<i>P</i> <0.05
Numbness	3	4	<i>P</i> <0.05
Stiffness	1	3	<i>P</i> <0.05
Deformity	2	3.5	<i>P</i> <0.05
Wash	1	3	<i>P</i> <0.05
Turn a door	1.5	3.5	<i>P</i> <0.05
Doing works	1.5	3	<i>P</i> <0.05
Writing	2	3	<i>P</i> <0.05
Transport	1.5	3	<i>P</i> <0.05
Activities	1	3	<i>P</i> <0.05
Need help	1	3	<i>P</i> <0.05
QOL	1	3	<i>P</i> <0.05

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358 Total maximum QOL score is 60, In 1<sup>st</sup> Day QOL score is 18 and after 6<sup>th</sup> week QOL score is 38.5.  
359 Therefore improvement is significant.

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**b. Analysis the QOL in one patient who were got treatment for 6month**

	1 <sup>st</sup> day	6 <sup>th</sup> week	3month	6month	Probability value
Total IOFQOL score(60)	17	26	35	43	<i>P&lt;0.05</i>
Pain	1	2	3	4	<i>P&lt;0.05</i>
Numbness	5	5	5	5	<i>P&lt;0.05</i>
Stiffness	1	1	2	3	<i>P&lt;0.05</i>
Deformity	2	2	3	3	<i>P&lt;0.05</i>
Wash	1	2	2	3	<i>P&lt;0.05</i>
Turn a door	1	2	2	3	<i>P&lt;0.05</i>
Doing works	1	2	3	4	<i>P&lt;0.05</i>
Writing	1	2	3	3	<i>P&lt;0.05</i>
Transport	1	2	3	3	<i>P&lt;0.05</i>
Activities	1	2	3	4	<i>P&lt;0.05</i>
Need help	1	2	3	4	<i>P&lt;0.05</i>
QOL	1	2	3	4	<i>P&lt;0.05</i>

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372 Total maximum QOL score is 60, In 1<sup>st</sup> Day QOL score is 17, after 6<sup>th</sup> week QOL score is 26, after  
373 3month QOL score is 35 and after 6 months QOL score is 43. Therefore improvement is significant.

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386 **Table 3 Group C (Analysis the quality of life to wrist fracture patients who took ayurvedic**  
387 **treatment after getting alternative treatment)**

388 **a. Analysis the QOL in two patient who were got treatment for 6month**

	1 <sup>st</sup> day	6 <sup>th</sup> week	3month	6month	<i>Probability value</i>
Total IOFQOL score(60)	17	24	35	41	<i>P&lt;0.05</i>
Pain	1.5	2.5	3.5	4	<i>P&lt;0.05</i>
Numbness	5	5	5	5	<i>P&lt;0.05</i>
Stiffness	1.5	2.5	3.5	4	<i>P&lt;0.05</i>
Deformity	1	2	3	3.5	<i>P&lt;0.05</i>
Wash	1	1.5	2.5	3.5	<i>P&lt;0.05</i>
Turn a door	1	1.5	2.5	3	<i>P&lt;0.05</i>
Doing works	1	1.5	2.5	3	<i>P&lt;0.05</i>
Writing	1	1.5	2.5	3	<i>P&lt;0.05</i>
Transport	1	1.5	2.5	3	<i>P&lt;0.05</i>
Activities	1	1.5	2.5	3	<i>P&lt;0.05</i>
Need help	1	1.5	2.5	3	<i>P&lt;0.05</i>
QOL	1	1.5	2.5	3	<i>P&lt;0.05</i>

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390 Total maximum QOL score is 60, 1<sup>st</sup> Day QOL score is 17, after 6<sup>th</sup> week QOL score is 24, after 3month  
391 QOL score is 35 and after 6<sup>th</sup> month QOL score is 41. Therefore improvement is significant.

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**b. Analysis the QOL in two patient who were got treatment for 3month**

	1 <sup>st</sup> day	6 <sup>th</sup> week	3month	Probability value
Total IOFQOL score(60)	21	31.5	42.5	<i>P</i> <0.05
Pain	2	2.5	3.5	<i>P</i> <0.05
Numbness	5	5	4.5	<i>P</i> <0.05
Stiffness	1.5	2	3	<i>P</i> <0.05
Deformity	2.5	3	4	<i>P</i> <0.05
Wash	1.5	3	4	<i>P</i> <0.05
Turn a door	1.5	2.5	3.5	<i>P</i> <0.05
Doing works	1.5	2.5	3.5	<i>P</i> <0.05
Writing	1.5	2.5	3.5	<i>P</i> <0.05
Transport	1	2	3	<i>P</i> <0.05
Activities	1	2	3	<i>P</i> <0.05
Need help	1	2	3.5	<i>P</i> <0.05
QOL	1	2.5	3.5	<i>P</i> <0.05

403

404 Total maximum QOL score is 60, 1<sup>st</sup> Day QOL score is 21, after 6<sup>th</sup> week QOL score is 31.5, and after  
405 3month QOL score is 42.5. Therefore improvement is significant.

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## 418 6. CONCLUSION

419 According to the result,

420 1<sup>st</sup> day, 6<sup>th</sup> week, 3 months and 6 months QOL score change from

421 ➤ Group A: Total maximum QOL score is 110, 1<sup>st</sup> Day QOL score is 16, after the 6<sup>th</sup> week QOL  
422 score is 39 and after 3 month QOL score is 55.

423 ➤ Group B

424 a. Analysis the QOL in two patient who were getting treatment for the 6<sup>th</sup> weeks  
425 Total maximum QOL score is 60, In 1<sup>st</sup> Day QOL score is 18 and after 6<sup>th</sup> week QOL score is  
426 38.5.

427 b. Analysis of the QOL in one patient who was getting treatment for 6 months  
428 Total maximum QOL score is 60, In 1<sup>st</sup> Day QOL score is 17, after 6<sup>th</sup> week QOL score is 26,  
429 after 3 month QOL score is 35 and after 6 months QOL score is 43.

430 ➤ Group C

431 a. Analysis of the QOL in two patients who were getting treatment for 3 months  
432 Total maximum QOL score is 60, 1<sup>st</sup> Day QOL score is 21, after 6<sup>th</sup> week QOL score is 31.5,  
433 and after 3 month QOL score is 42.5.

434 b. Analysis of the QOL in two patients who were getting treatment for 6 months  
435 Total maximum QOL score is 60, 1<sup>st</sup> Day QOL score is 17, after 6<sup>th</sup> week QOL score is 24,  
436 after 3 month QOL score is 35 and after 6<sup>th</sup> month QOL score is 41.

437 ❖ In group A, Patients who were directly visited to Ayurvedic treatment in BMARI at Orthopedic  
438 clinic they were getting quick improvement seen within 3 months.

439  
440 ❖ In group B, Patients who were visited to Ayurveda treatment in BMARI at Orthopedic clinic after  
441 getting the western treatment, QOL in two patients who were getting treatment for 6<sup>th</sup> weeks QOL  
442 change from 18→ 38.5. QOL in one patient who were getting treatment for 6 month QOL change  
443 from 17→ 26 → 35→43.

444 In group C, Patients who were visited to Ayurveda treatment in BMARI at Orthopedic clinic after  
445 getting the alternative treatment, QOL in two patients who were getting treatment for 3 month QOL  
446 change from 21→31.5→42.5. QOL in one patient who were getting treatment for 6 month QOL  
447 change from 17→24→35→ 41.

448 According to the above results, patients got quickly improve by Ayurveda treatment than group B  
449 and C.

450

451 **Acknowledgment**

452 I acknowledge thanks to all persons who have helped me directly and indirectly with apology for my  
453 inability to identify them individually.

454

455 **Ethical Approval:**

456 This research is conducted in my Internship period at Bandaranayaks Memorial  
457 Ayurvedic Research Institute (BMARI). BMARI is a research institute so I didn't get the ethical clearance.

458

459 **7. Suggestions**

460 According to results and patients, satisfaction in Ayurveda treatment of fracture management is  
461 very effective. We should give awareness about, the effectiveness of Ayurveda fracture healing and  
462 management to public.

463 Suggested to analyzed number of individuals will increase we can get better results.

464

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## Appendix

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Serial No:

OPD ticket No:

## 497 Analysis the improvement of the quality of life in Ayurvedic treatment 498 for the wrist fracture

### 499 1. Patient's general data

- 500 i. Name:  
501 ii. Age:  
502 iii. Sex:  
503 iv. Permanent address:  
504  
505 v. Religion:  
506 vi. Civil status:  
507 vii. Occupation:  
508

### 509 2. History of fracture

- 510 i. Date of fracture:  
511 ii. Type of fracture:  
512 iii. Fracture side:  
513 (Dominant/ non dominant)  
514 iv. Wound: (Present/ Absent)

515 v. Any other history

516

517

518 3. General data

519 Height:

520 Weight:

521 BMI:

522

523

524

525 4. Do you still have pain in the fractured forearm or hand?

526

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

527

528 5. Do you have numbness or "pins and needles" in the fractured forearm or hand?

529

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

530

531 6. Do you have stiffness in the fractured forearm or hand?

532

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

533

534 7. Are you disturbed by the deformity of your fractured forearm?

535

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

536

537

8. Can you wash or blow dry your hair?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Without difficulty				
ii. With a little difficulty				
iii. With moderate difficulty				
iv. With great difficulty				
v. impossible				

538

539

540

541

9. Can you turn a door key or unscrew the lid of a jar?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Without difficulty				
ii. With a little difficulty				
iii. With moderate difficulty				
iv. With great difficulty				
v. impossible				

542

543

9. Do you have problems with doing your work or homework?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. No difficulty				
ii. a little difficulty				
iii. moderate difficulty				
iv. may need some help				
v. impossible				

544

545

546

10. Do you have problems with typing or writing?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. No difficulty				
ii. a little difficulty				
iii. moderate difficulty				
iv. great difficulty				

v. impossible				
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547

548

11. Can you use private transport e.g. drive a car or use a bicycle?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. No difficulty				
ii. a little difficulty				
iii. moderate difficulty				
iv. great difficulty				
v. impossible				

549

550

551

12. To what extent has your fractured forearm interfered with your activities during the last week?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

552

553

13. Do you need help from your friends or relatives because of your forearm fracture?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Never				
ii. 1day per week or less				
iii. 2-3days per week				
iv. 4-6days per week				
v. Every day				

554

555

556

14. Would you say that your quality of life has declined during the last three months because of your forearm fracture?

	1 <sup>st</sup> visit	6 weeks	3 months	6months
i. Not at all				
ii. A little				
iii. Moderately				
iv. quite a lot				
v. very much				

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X  
ray  
of

571

wrist fracture patient

572

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