

Pain Perception Young Adult versus Aged Using Visual Analog Rating Scale

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Abstract

Aim: Pain is the most common complaint in most of the patients in post-operative period. The elderly frequently suffer from discomfort or are not cared. It can be difficult to measure pain accurately in the elderly. The elderly may present pain atypically particularly if the cognition is impaired. Rather than admitting to the presence of pain, they may use the terms such as aching and hurting.

Methods and Statistics: Keeping in view the problems faced by the elderly in expressing pain intensity, a study was carried out comparing pain scores between young adults and the elderly. Patients between 17 and 67 years of age undergoing surgery of any kind were randomized into two groups. Group 1 consists of young adult between 17 and 27 years of age and Group 2 consists of aged adult between 47 and 67 years. Each group was divided into 50 patients each of ASA Grade 1 and 2 and both the groups were statistically compared at varying intervals, for example, 1st h after surgery, 4 h, 8 h, 24 h, 36 h, 48 h, and at 72 h.

Observation and Results: It was found that pain score was more in young adults as compared to the elderly and the difference in pain score was statistically significant, $P < 0.001$, which showed that the elderly feel less pain, reason can be multifactorial.

Conclusion: Our study showed that young patients were more perceptible to acute pain as compare to older patients.

Key words: Age, Pain, Numerical rating scale, Visual analog scale

INTRODUCTION

Pain perception is a subjective phenomenon influenced by age and gender of the person. Hence, there should be an appropriate pain assessment scoring system which exactly measures the severity of the pain measuring scales validated over the years such as visual analog scale (VAS), verbal rating scale (VRS), numerical rating scale (NRS), and many more. The well-known VAS and NRS assessment of pain intensity agree well and are equally sensitive in assessing acute pain after surgery and they are both superior to a 4-point verbal categorical rating scale (VRS). They function best for the patient's subjective

feeling of the intensity of pain right now – present pain intensity. Age difference in pain perception is less consistent, some studies show that older patients are more sensitive to pain than young adults, whereas other studies show a decrease in pain sensitivity in older patients.^[1] The development of these scales is done with the active participation of the patients by the health professionals.^[2] Pain assessment tools help health professionals to quantify a subjective phenomenon into objective terms to inform and evaluate pain management within the context, the presence of severe unresponding pain is often regarded as one of the most common and devastating threats to health-related quality of life.^[3] Recent epidemiologic studies indicate that more than 50% of older persons suffer from some form of persistent pain. The older person face many threat to quality of life, including a marked increase in incidence of disease, high level of fractional disability, loss of lifetime partner or friends and family support networks, reduction in economic resources, and the foreboding prospect of institutional placement with an associated loss of independence.^[4,5]

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However, several studies suggest that older adults report a low intensity of post-operative or procedural pain when compared with younger adults.^[6,7] Although such findings are not universal, investigations also indicate that verbal reports of pain tend to decrease as cognitive impairment increases^[8] and may depend on the age range of the sample and type of the scale used to measure it.^[9]

Many physicians believe that older people feel less degree of pain than younger, it may probably be due to their loss in ability to perceive pain.^[10] However, some feel that an increase in the incidence of severity of pain is seen with age until the seventh decade, this may, however, could be due to the fact that older patients suffer from conditions as dementia, which affect how they express themselves or simply that then life experience has made them view then pain differently.^[11]

Acute pain can reliably be assessed, both at rest (important for comfort) and during movement (important for function and risk of post-operative complications), with one-dimensional tool such as numeric rating scales or VAS. Both are better when it comes to pain level changes than a VRS. They are more effective. In acute pain trials, assessment of baseline pain must ensure sufficient pain intensity for the trial to detect meaningful treatment effects.^[12]

Most papers reported good correlation between scales, particularly so between NRS and VAS. In case of discrepancy, NRS scores were considered to be higher than the equivalent VAS scores, especially the verbal NRS scores.^[13] One study found that more than 75% of the patients provided ratings that were not mathematically equivalent on NRS and VAS.^[14]

Relatively little investigative or clinical attention has been paid to the assessment of pain in the geriatric population when compared with the general population. This is shocking because population-based statistics shows that pain in people over 60 (250 per thousand) is twice their incidence relative to those under 60 years of age (125 per thousand).^[15-17]

The elderly will use words such as doling and hurting, rather than accept the presence of suffering. Communication and cognitive disturbances are additional barriers to such assessment.^[18]

Pain has been described as the fifth “vital sign,” and therefore, physician should regularly enquire about the presence of pain in elderly patients. Pain can be assessed even in those with dementia, using simple questions and screening tools.^[19]

Sample Size Calculation

Sample size was calculated keeping in view at most 5% risk, with minimum 85% power and 5% significance level (significant at 95% confidence interval).

MATERIALS AND METHODS

After taking permission from ethic committee of Govt. Medical College, Amritsar, we have conducted a prospective randomized study in the Department of Anesthesiology and intensive care unit in which 100 patients were taken and distributed in Groups I and II. Group I included 50 young adults of the age between 17 and 27 years of sexes and Group II included 50 older patients of both the sexes aged between 47 and 67 years. The patients with chronic pain and those with intoxication were excluded from the study. All patients belonged to ASA Grade 1 and 2. To measure the pain score, NRS was used. Patients were kept in the hospital for day 1 (on the day of surgery), day 2 (post-operative day), and day 3 (post-operative day) and their pain score was measured 1 h, 4 h, and 8 h after surgery on day 1, then in the morning at 9 o'clock and in the evening at 9 o'clock at day 2nd and again pain score was measured in the morning at 9 o'clock and in the evening at 9 o'clock at day 3rd. The pain scores were measured, analyzed, and statistically compared. All patients in the post-operative period were given only one type of rescue analgesia in the form of inj. diclofenac sodium (IM) and who do not relieved with diclofenac were given inj. tramadol (IV).

Observations

Age and sex distribution

Mean age in Group I was 24.3 years and mean age in Group II was 58.7 years. In Group 1, there were 24 males and 26 females while in Group 2, there were 27 males and 23 females. Hence, the sex distribution was insignificant while comparing both the groups.

Pain Scoring after Surgery

[Table 1, Graph 1] On day 1, in Group I, pain score using VAS scoring method was 70 mm in 25 patients each, 80 mm in 15 patients each, and 90 mm in 10 patients each. Hence, total scoring was 3850 mm in 50 patients and mean was 77 mm and $SD \pm 7.88$. In Group II, pain score was 60 mm in 24 patients each, 50 mm in 16 patients each, and 70 mm in 10 patients each, total scoring in 50 patients was 2940 mm, with mean of 58.8 and $SD \pm 7.18$.

[Table 2, Graph 2] Four hours after surgery: Total score in Group I was 3880, mean 77.6 and $SD \pm 7.25$. While in Group II, total score was 3260, mean 65.2 and $SD \pm 6.46$.

[Table 3, Graph 3] Eight hours after surgery: In Group I, total score was 2790, mean 55.8 and SD±4.44. While in Group II, total score was 2430, mean 48.6 and SD±7.28.

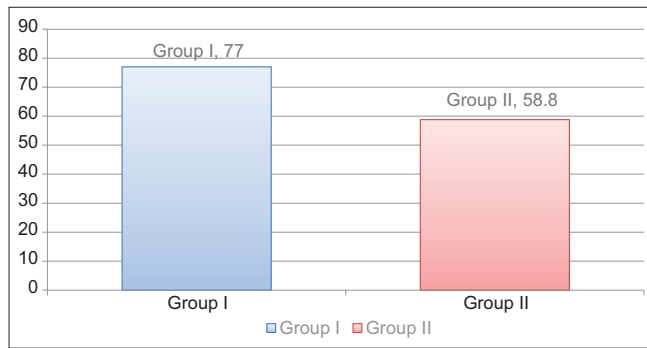
[Table 5, Graph 5] Twenty-four hours: In Group I, total score was 3212. Mean was 64.24 and SD±3.76, while in Group II, total score was 2488, mean 49.76 and SD±3.76.

[Table 4, Graph 4] On day 2, at 24 h: In Group I, total score was 3260 mm, mean 65.2 mm and SD±5.20, while in Group II, total score was 2794, mean 54.48 and SD±7.88.

[Table 6, Graph 6] At 48 h, in Group I, total score was 1864 mm, mean 37.28 mm and SD±6.92. While in Group II, total score was 1486 mm, mean 29.72 mm and SD±3.60.

Table 1: Comparing Group I (young) with Group II (aged) 1 hour after Surgery

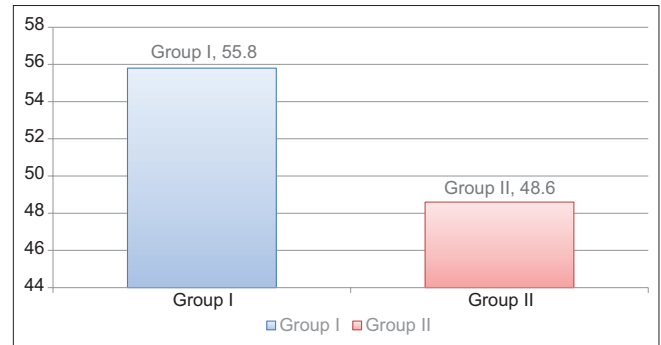
Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D	No. of patients	Pain score in mm	Mean±S.D
25	70	77.0±7.88	24	60	58.8±7.18
15	80		16	50	
10	90		10	70	
50	3850		50	2940	



Graph 1: Comparing Group I (young) with Group II (aged) 1 hour after Surgery

Table 3: Comparing Group I (young) with Group II (aged) 8 hour after Surgery

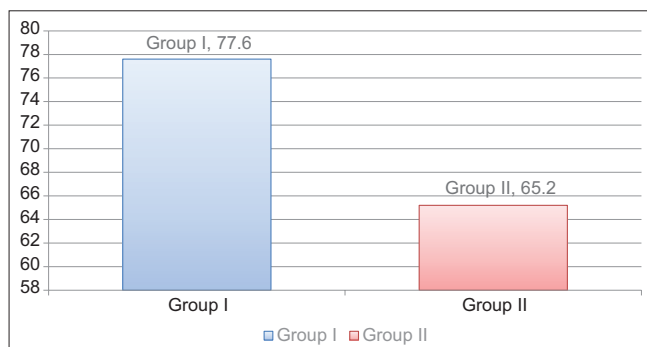
Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D.	No. of patients	Pain score in mm	Mean±S.D.
24	60	55.8±4.44	23	50	48.6±7.28
16	50		17	40	
10	55		10	60	
50	2790		50	2430	



Graph 3: Comparing Group I (young) with Group II (aged) 8 hour after Surgery

Table 2: Comparing Group I (young) with Group II (aged) 4 hour after Surgery

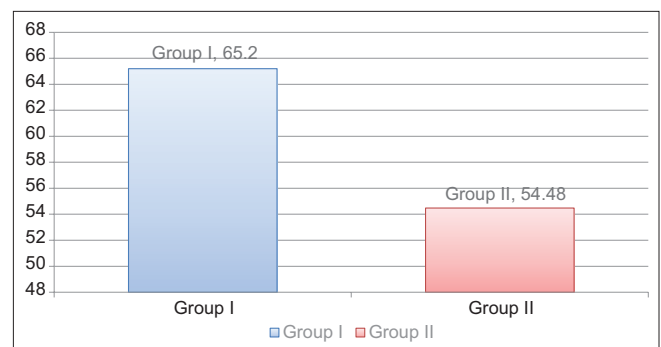
Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D.	No. of patients	Pain score in mm	Mean±S.D.
20	70	77.6±7.25	18	70	65.2±6.46
22	80		28	60	
08	90		04	80	
50	3880		50	3260	



Graph 2: Comparing Group I (young) with Group II (aged) 4 hour after Surgery

Table 4: Comparing Group I (young) with Group II (aged) 24 hour after Surgery

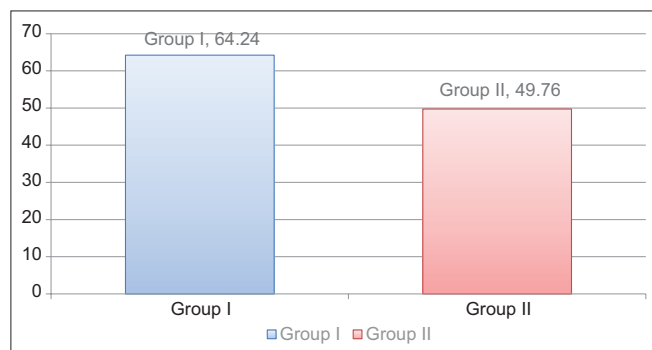
Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D	No. of patients	Pain score in mm	Mean±S.D
20	60	65.2±5.20	20	52	54.48±7.88
20	66		08	40	
10	74		22	62	
50	3260		50	2794	



Graph 4: Comparing Group I (young) with Group II (aged) 24 hour after Surgery

Table 5: Comparing Group I (young) with Group II (aged) 36 hour after Surgery

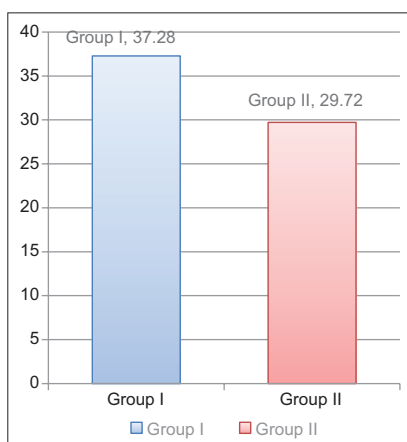
Group I			Group II		
No. of patients	Pain score in mm	Mean ± S.D.	No. of patients	Pain score in mm	Mean ± S.D.
20	60	64.24 ± 3.76	22	48	49.76 ± 3.76
22	66		20	54	
08	70		08	44	
50	3212		50	2488	



Graph 5: Comparing Group I (young) with Group II (aged) 36 hour after Surgery

Table 6: Comparing Group I (young) with Group II (aged) 48 hour after Surgery

Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D.	No. of patients	Pain score in mm	Mean±S.D.
26	42	37.28±6.92	28	32	29.72±3.60
14	38		20	28	
10	24		02	15	
50	1864		50	1486	

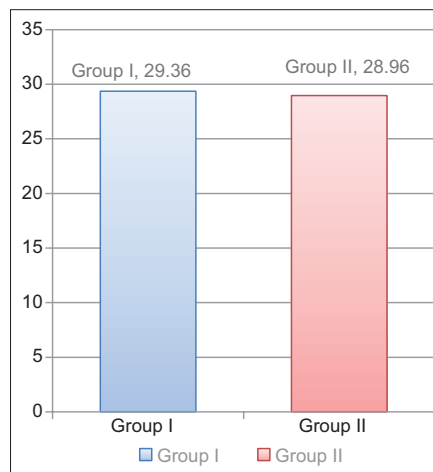


Graph 6: Comparing Group I (young) with Group II (aged) 48 hour after Surgery

[Table 7, Graph 7] At 72 h, in Group I, total score was 1468 mm, mean 29.36 mm and SD±3.16. While in Group II, total score was 1448 mm, mean 28.16 mm and SD±3.08.

Table 7: Comparing Group I (young) with Group II (aged) 72 hour after Surgery

Group I			Group II		
No. of patients	Pain score in mm	Mean±S.D.	No. of patients	Pain score in mm	Mean±S.D.
20	32	29.36±3.16	22	32	28.96±3.08
18	30		18	28	
12	24		10	24	
50	1468		50	1448	



Comparing Group I (young) with Group II (aged) 72 hour after Surgery

DISCUSSION

On comparing pain score using VAS scoring method, it was found that young patients had more mean pain score one hour after surgery, four hour after surgery, eight hour after surgery, on the day 1, and in the morning and evening on the day 2nd, again in the morning on the day three as compare to older patients and the difference in pain perception was very significant, $P < 0.001$. While in the evening of day 3, the perception of pain in both the groups was insignificant, $P = 0.52$. Our results are consistent with studies conducted by Gagliese *et al.*,^[19] and Taverner *et al.*^[20] and Hallingbye *et al.*^[21]

CONCLUSION

Our study showed that young patients were more perceptible to acute pain as compare to older patients. Reason may be much factorial, it may be due to their loss of pain receptors, it may be due to psychological factor that older patients were unable to express due to loss of cognitive function and also they were more tolerant to acute pain.

REFERENCES

1. Chadosh J, Solomon DH, Roth CP, Chang JT, Maclean CH, Ferrell BA, *et al.* The quality of medicare provided to vulnerable older patients with chronic

- pain. *J Am Geriatr Soc* 2004;52.
2. Aziato L, Deday F, Marfo K, Asamani JA, Nat AJ. Clegg lamptey. Validation of three pain scales among adult post-operative patients in Ghana. *BMC Nurs* 2015;14:4.
 3. Ekblom A, Hansson P. Pain intensity measurement in patients with acute pain receiving afferent stimuli neural. *Neurosurg Psychiatry* 1988;51:481-6.
 4. Bellrille JW, Forrest WH Jr., Miller E, Brown BW Jr. Influence of age on pain relief from analgesics. A study of post-operative patients. *JAMA* 1971;217:1835-41.
 5. Rodriguez CS, Mc Millan S, Varandi H. Pain measurement in older adults with head and neck cancer and communication impairment. *Cancer Nurs* 2004;27:425-33.
 6. Gagliese, Weizblit N, Ellis W, Chan VWS. The measurement of postoperative pain. A comparison of intensity scales in younger and older surgical patient. *Pain* 2005;7:412-20.
 7. Myles PS, Myles DB, Galagher W, Boyd D, Chew C, MacDonald N, *et al.* Measuring acute postoperative pain using the visual analog scale: The minimal clinically important difference and patient acceptable symptom state. *Br J Anaesth* 2017;118:424-9.
 8. Bergh I, Sjoström B, Oden A, Steen B. An application of pain rating scales in geriatric patients. *Aging (Milano)* 2000;12:380-7.
 9. Herr KA, Sparrt K, Mobily PR, Richardson G. Pain intensity assessment in older adults; use of experimental pain to compare psychometric properties and ability of selected pain scales with younger adults. *Clin J Pain* 2004;20:207-19.
 10. Kelly AM. Does the clinically significant difference in visual analogue scale pain scores vary with gender, age or cause of pain. *Acad Emerg Med* 1998;5:86-90.
 11. Peters ML, Patijn J, Lame I. Pain assessment in younger and older pain patients: Psychometric properties and patient preference of five commonly used measures of pain intensity. *Pain Med* 2007;8:601-10.
 12. Price DD, Bush FM, Long S, Harkins SW. A comparison of pain measurement characteristics of mechanical visual analogue and simple numerical rating scales. *Pain* 1994;56:217-26.
 13. Margnie L, Dvarte LR, Marine C, Larhne D, Sorum PC. How patients and physician rate patients pain in a French emergency department using a verbally administered numerical rating scale and a visual analogue scale. *Acute Pain* 2008;10: 27-31.
 14. Carpenter JS, Brockopp D. Comparison of patients ratings and examination of nurses responses to pain intensity rating scales. *Cancer Nurs* 1995;18:292-8.
 15. Katz J, Melzack R. measurement of pain. *Surgelin North Am* 1999;79:231-52.
 16. Gibson SJ, Helme RD. Age related difference in pain perception and report. *Clin Geriatr Med* 2001;17:433-56.
 17. Miller J, Neelon V, Dalton J, Ng'andu N, Bailey D Jr., Layman E, *et al.* The assessment of discomfort in elderly confused patients: A preliminary study. *J Neurosci* 1996;28:178-82.
 18. Herr KA, Garrard L. Assessment and measurement of pain in older adults. *Clin Geriatr Med* 2001;17:457-78.
 19. Gagliese L, Katz J. Age differences in postoperative pain are scale dependent: A comparison of measures of pain intensity and quality in younger and older surgical patients. *PAIN®* 2003;103:11-20.
 20. Tarnia Taverner. The evidence on perceptions of pain in older people. *Nurs Times* 2005;101:36.
 21. Hellingbye T, Martin J, Viscomi C. Acute post-operative pain management in the older patient. *Aging Health* 2011;7:813-28.

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