



An investigation of treatment outcome for Class I patients using the Peer Assessment Rating (PAR) Index

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INTRODUCTION

Today's modern societies are concerned about their appearance which include the esthetics of well-aligned teeth. Crowded, mal-aligned and protruding teeth are considered unattractive. Orthodontic appliances are becoming an important treatment tool for aligning teeth and achieving aesthetics and good occlusion. Since the establishment of the Orthodontic Department at the Faculty of Odonto-Stomatology, Phnom Penh, Cambodia in 2004, more than 300 patients have been treated to correct their malocclusion and improve their esthetics. The outcome of treatment of Class I, Class II and Class III malocclusion with orthodontic appliance can be measured using the PAR Index (Peer Assessment Rating Index) (2).

AIMS OF STUDY

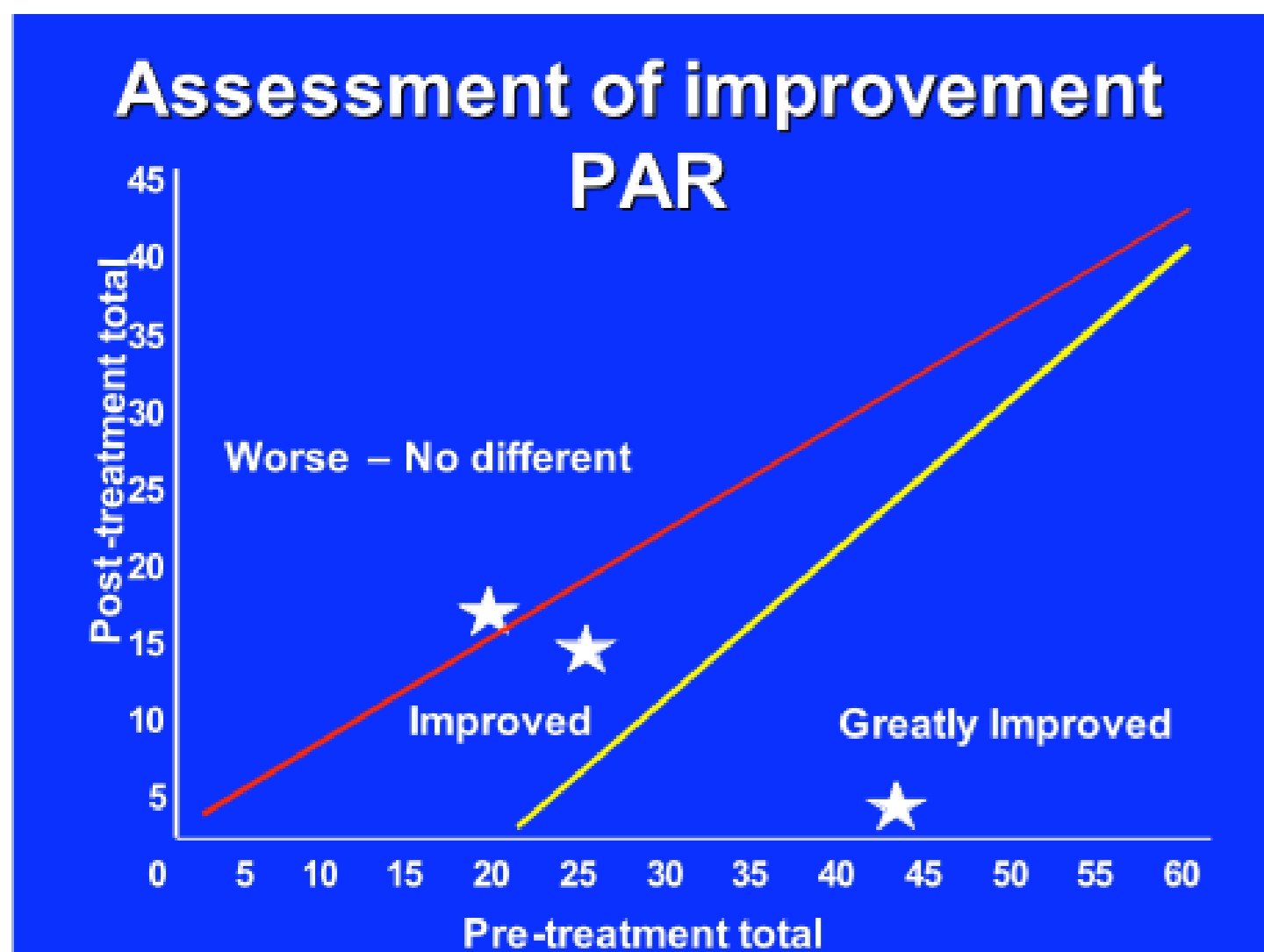
To establish the standard of treatment outcome for orthodontic patients presenting with a Class I malocclusion from year 2004 to 2013

MATERIALS AND METHOD

All patients with complete records (36 out of 50) who presented with a Class I malocclusion (British Standard Institute) and had been treated by the eight postgraduate students in the first and second cohort using fixed upper and lower appliances. This retrospective study was undertaken by one individual who had undergone PAR calibration and had successfully shown reproducibility in scoring separately. Data was analyzed using SPSS version 21.0, significance was set at $P < 0.05$.

The 3 aspects of the PAR index used in accessing treatment outcome are:

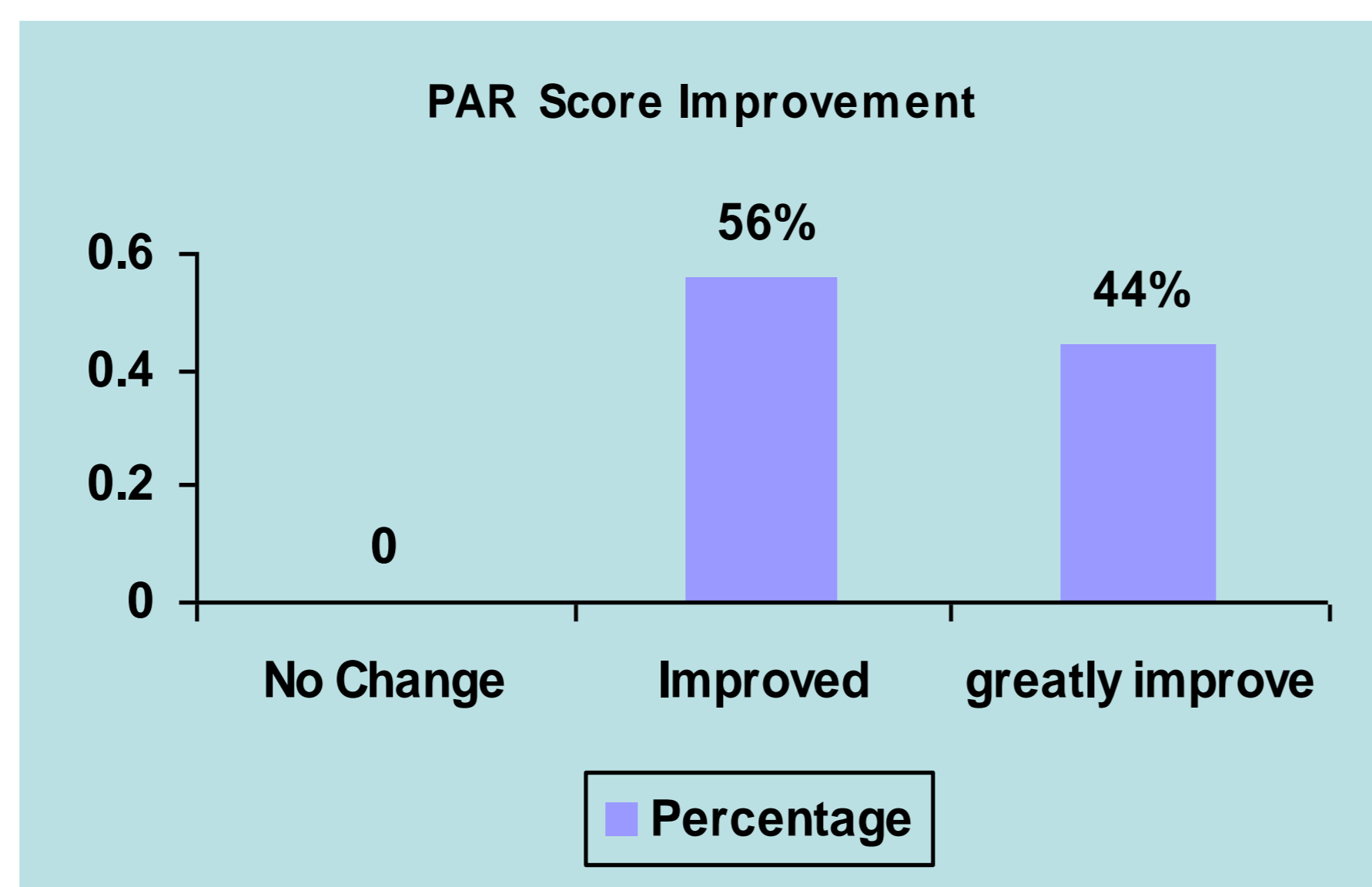
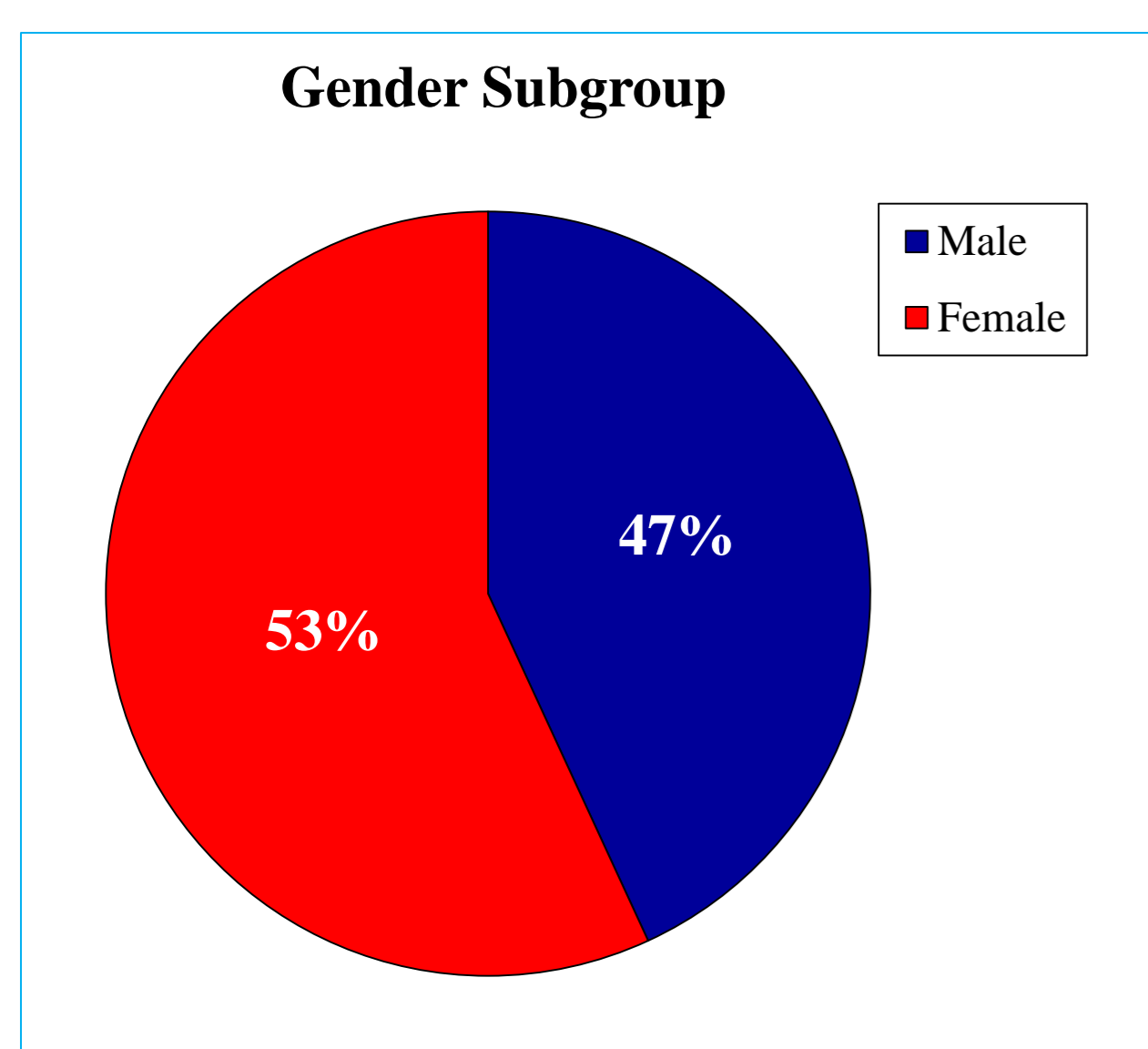
- 1) Reduction in weighed PAR score (Pre-treatment-Post-treatment PAR eg. $39-2=37$)
- 2) Percentage change in weighted PAR score (PAR reduction/Pre-treatment PAR x 100 eg. $37/39 \times 100 = 94\%$)
- 3) Nomogram: Worse or No different, Improved, Greatly Improved



Richmond et al proposed certain criteria for identifying a high standard of treatment is achieved when

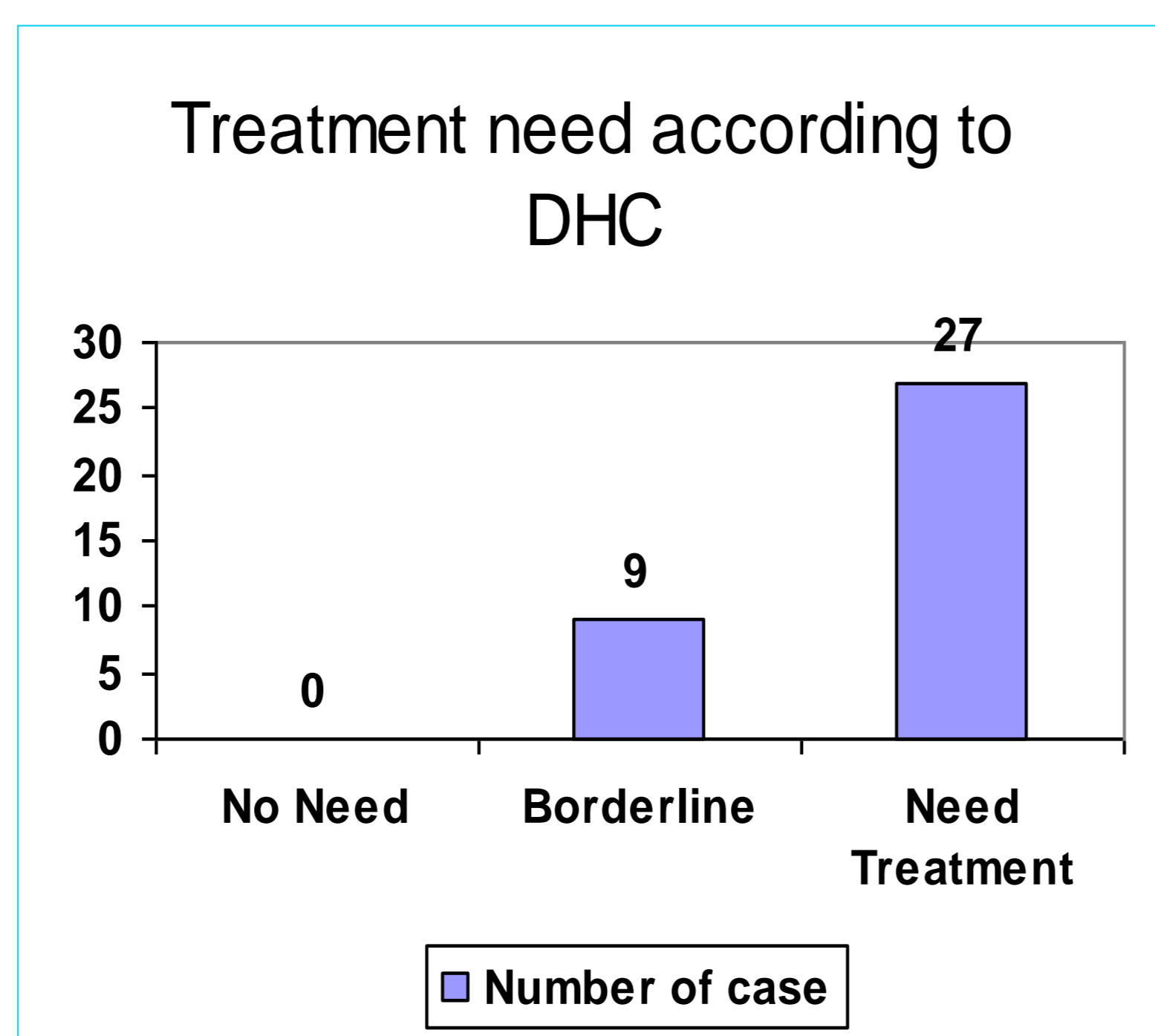
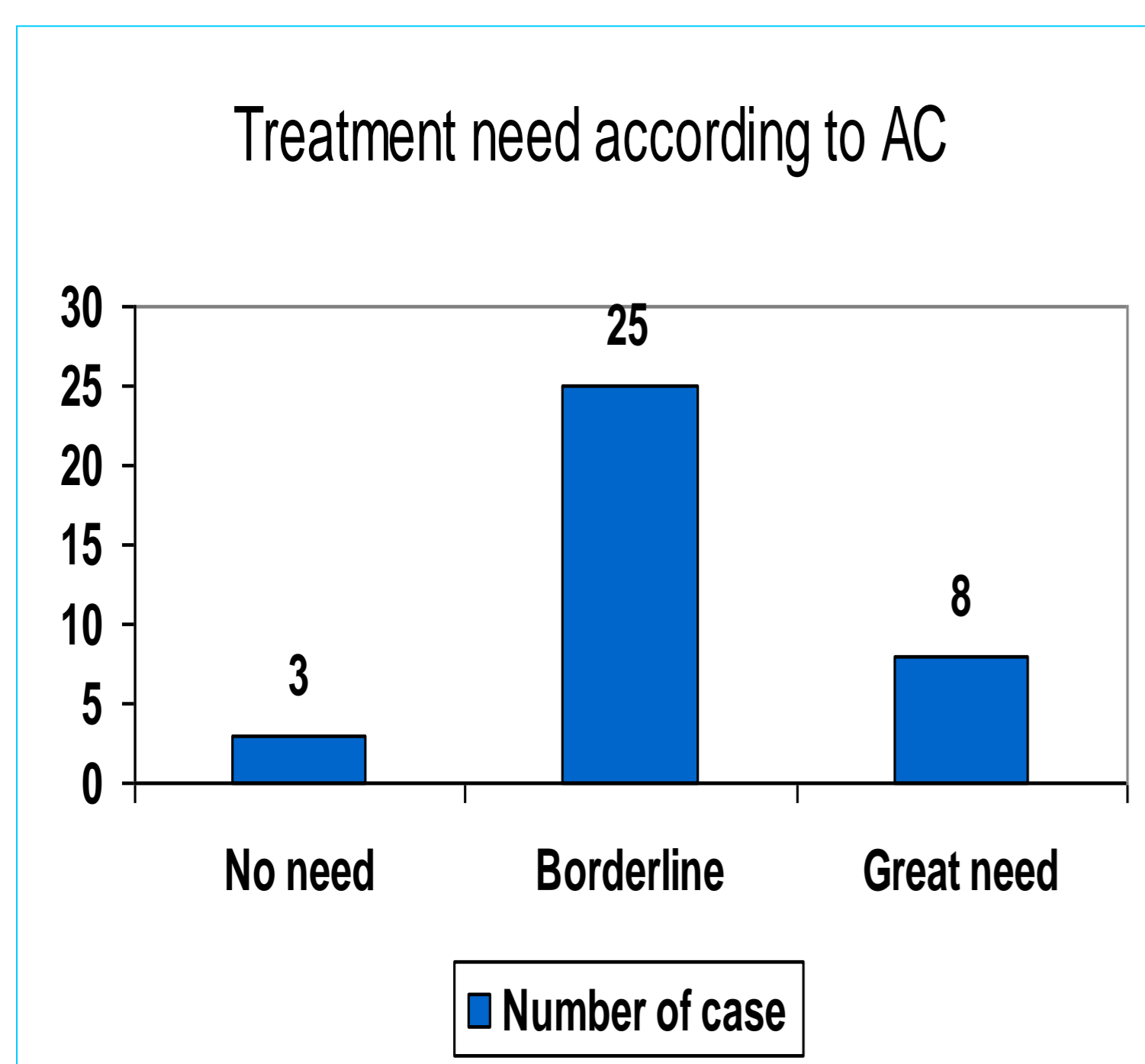
- 1) the proportion of the cases falling into the 'worse/no different' category of an orthodontists case load is **less than 5%**
- 2) the **mean reduction in PAR score being >70%**
- 3) the **greatly improved category should be in over 40%**

RESULT



Average age is $15.33 \pm SD 4.08$ years old ranging from 9.08 to 25.83

The sample included 17 males and 19 females with an average age of 15.33 years old, $SD \pm 4.08$ ranging from 9.08 to 25.83. Mean weighted pre-treatment PAR was 24.83 $SD \pm 8.5$, Mean post-treatment PAR score was 5.22 $SD \pm 2.08$. The average PAR score reduction was 19.61 $S.D. \pm 7.99$, range 5-39. The average percentage score reduction was 77.64%, $S.D. \pm 9.90$ range 43-91%. 44% of cases were 'Greatly improved' and 56% were 'Improved'. None of the 36 cases were 'Worse/ no different'



RESULT (CONTINUE)

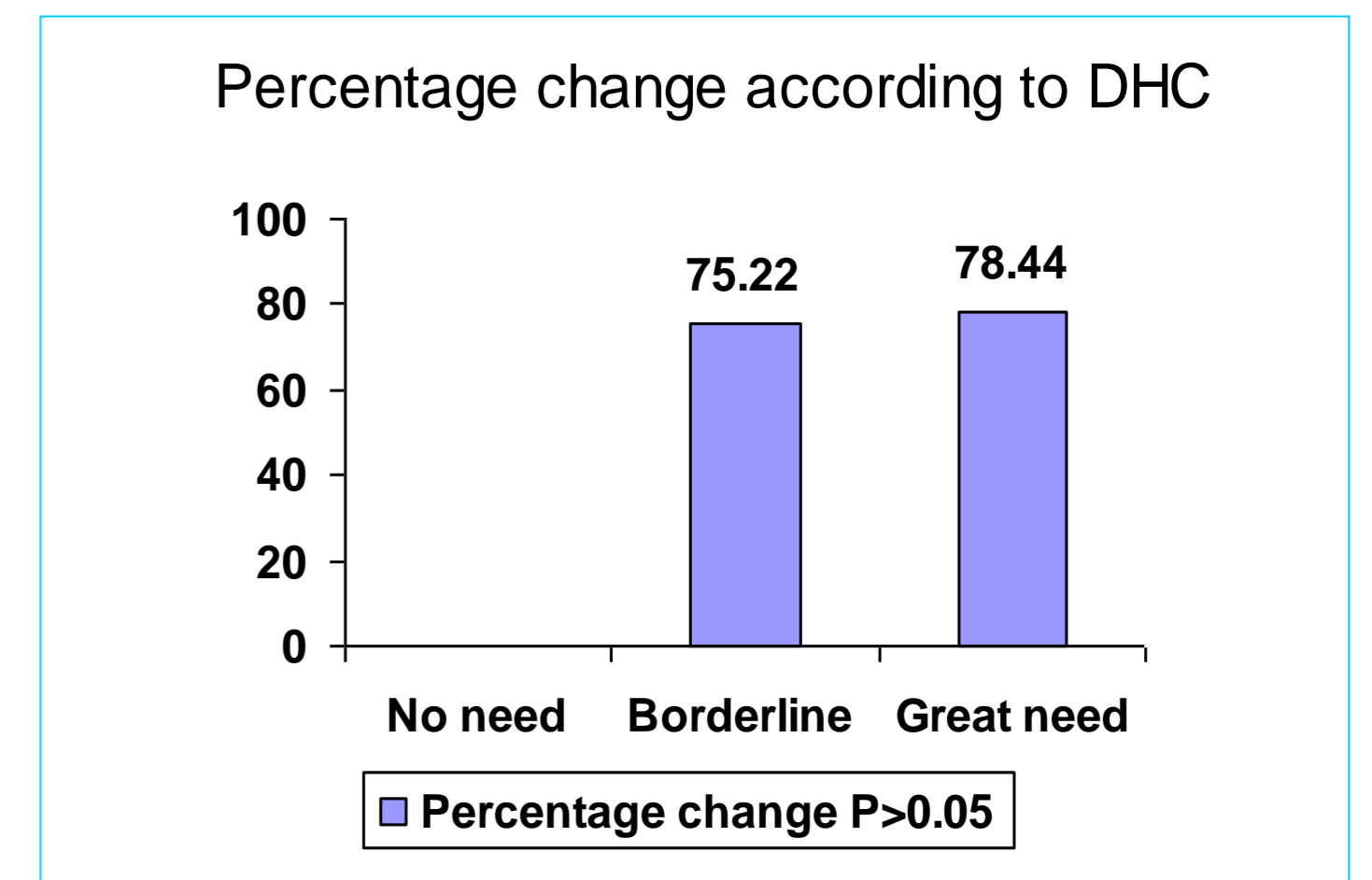
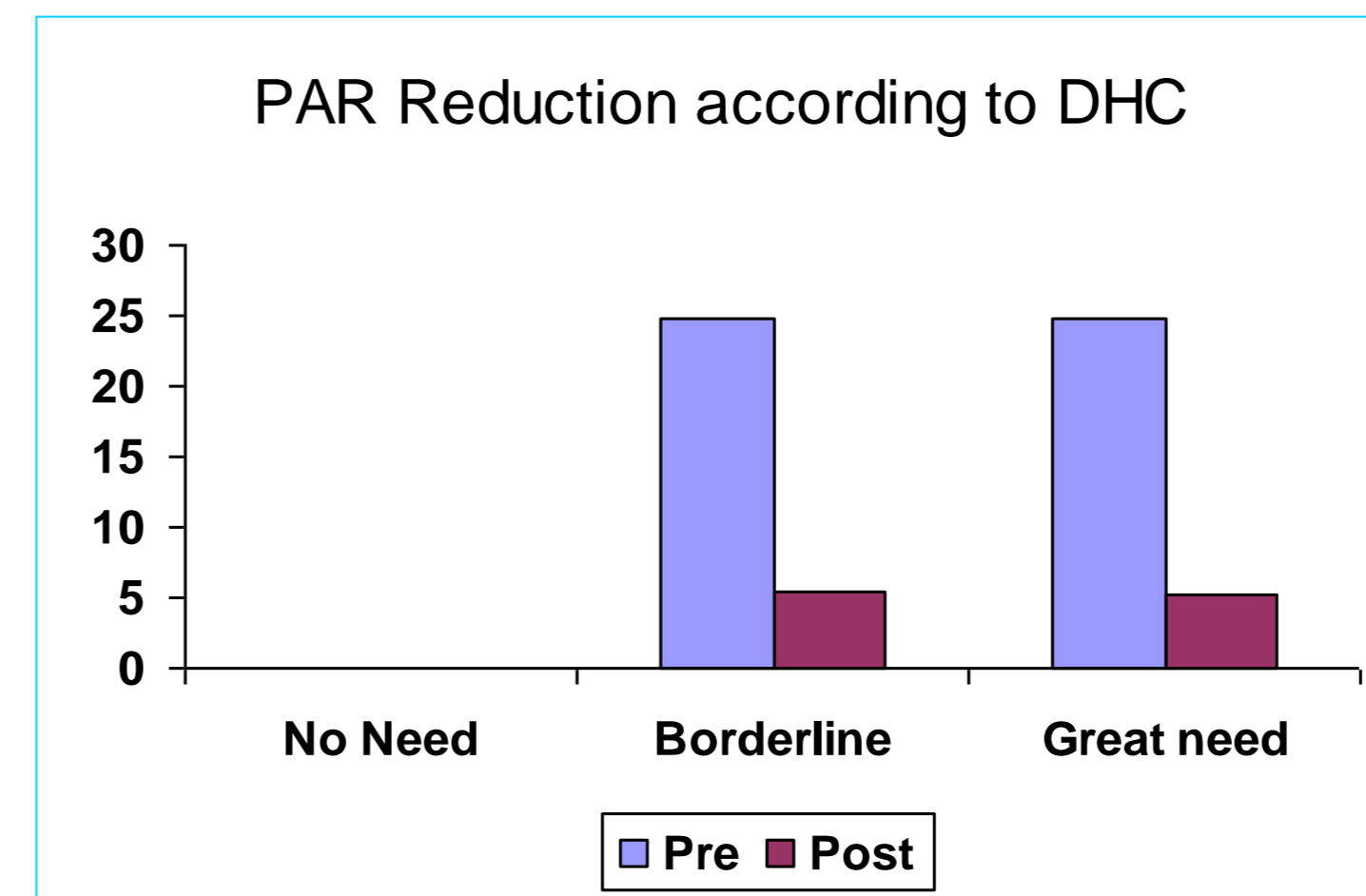
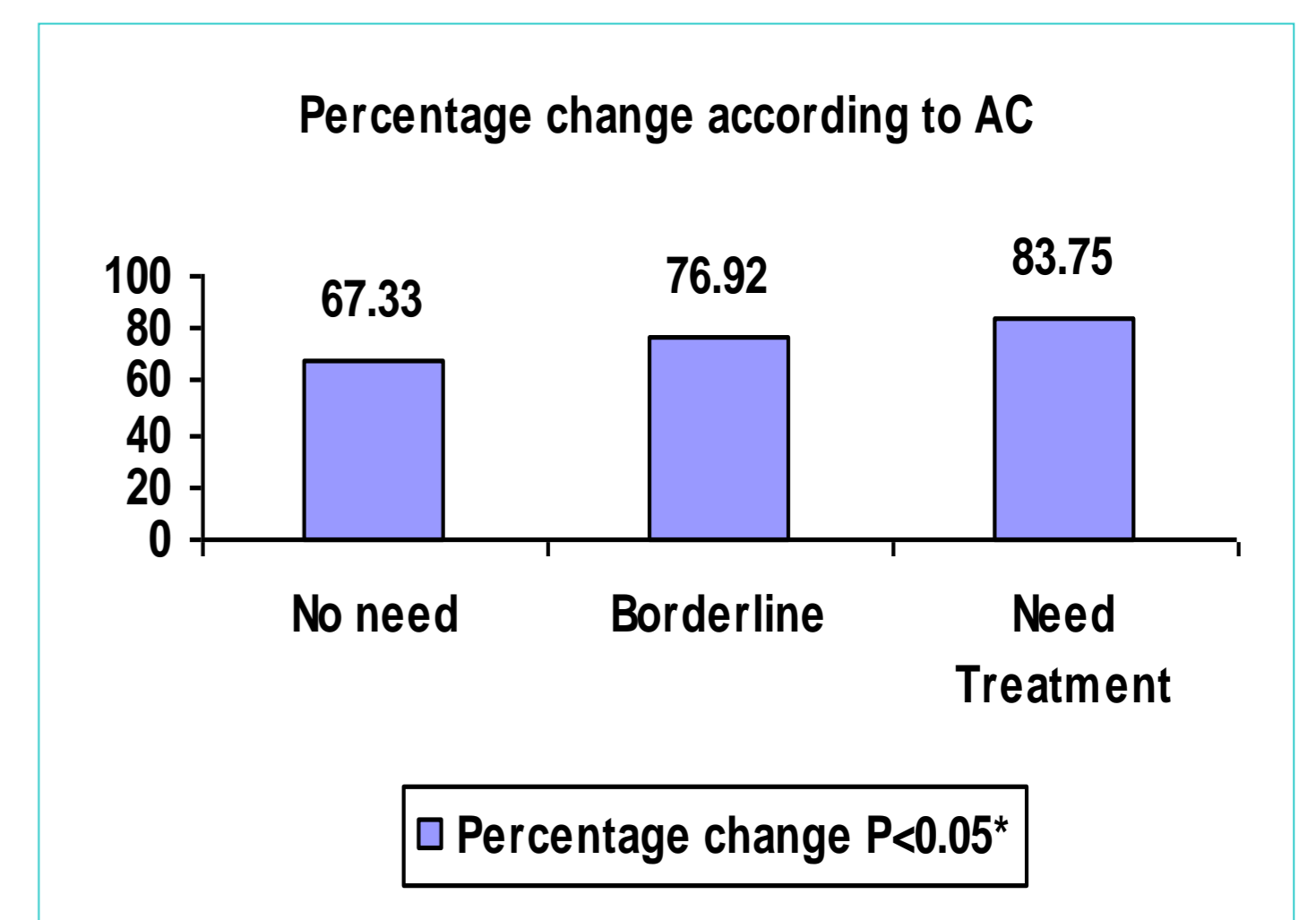
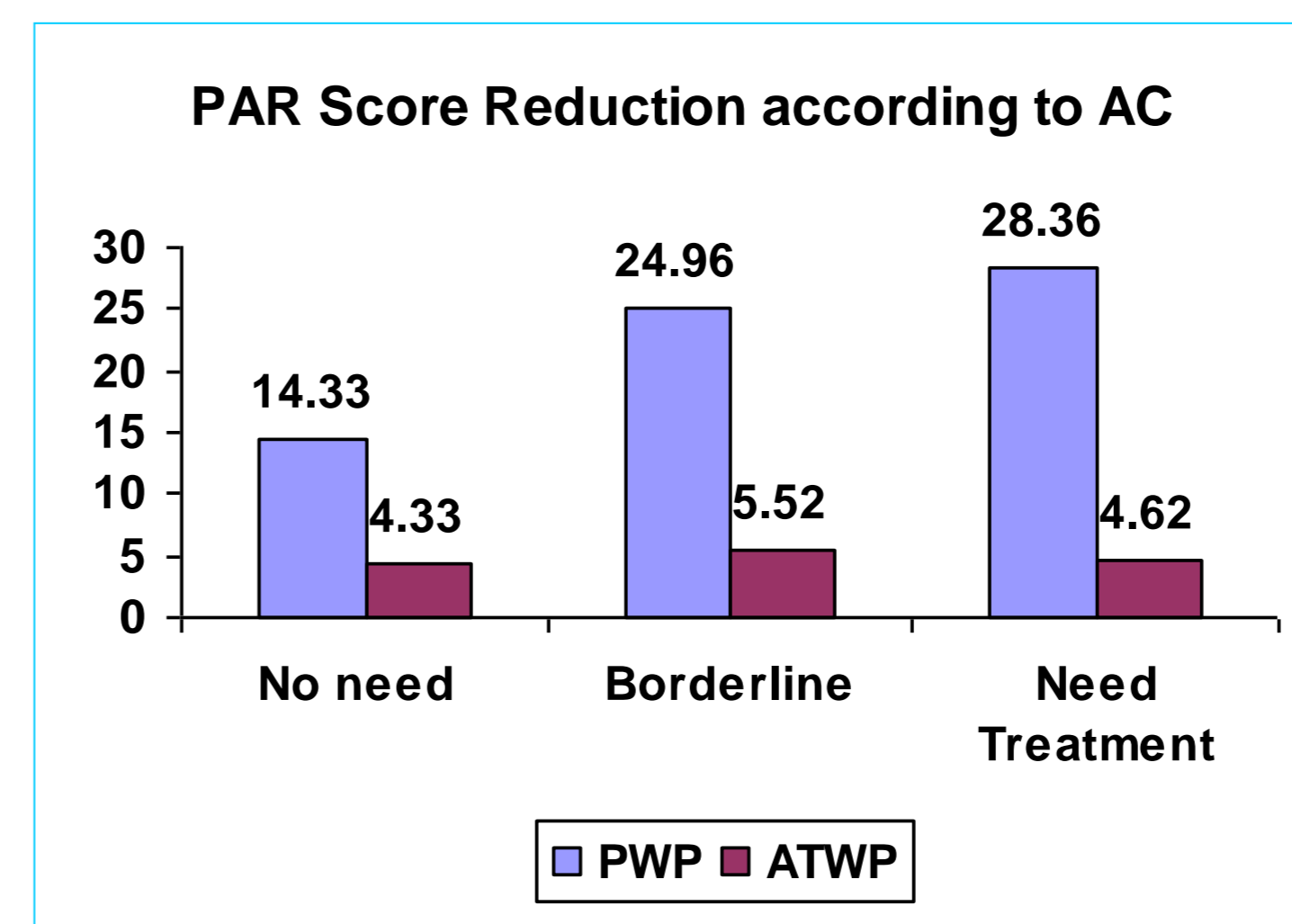


Table 1: PAR Improvement according to Pre-treatment DHC

Percentage Change	N	Mean	SD
Moderate/ Borderline need DHC 3	9	75.22	15.04
Need for treatment DHC4 and DHC 5	27	78.44	7.72
Total	36	77.64	9.90

$P > 0.05$ no significant different for DHC

Table 2: PAR Improvement according to Pre-treatment AC

Percentage Change	N	Mean	SD
No need for treatment 1- 4	3	67.33	19.34
Borderline/ Moderate need 5, 6 and 7	25	76.92	9.01
Need Ortho treatment 8, 9 and 10	8	83.75	3.80
Total	36	77.64	9.90

$P < 0.05$ significant for AC

Table 3: Comparison of PAR score by gender

Female v Male	F	M	Mean F	Mean M	SDF	SDM	Mean diff.	P Value	Significance
PUWP	19	17	16.79	17.47	3.44	4.18	-0.68	0.59	NS
PWP	19	17	24.32	25.41	8.18	9.17	-1.09	0.70	NS
ATUWP	19	17	5.21	4.94	1.61	2.10	0.27	0.66	NS
ATWP	19	17	5.21	5.24	1.61	2.56	-0.03	0.97	NS
PAR red	19	17	19.11	20.18	8.10	8.06	-1.07	0.69	NS
Percentage change	19	17	77.05	78.29	8.23	11.71	-1.24	0.71	NS

DISCUSSION

HIGH STANDARD of treatment were evaluated according to the criteria described by Richmond *et al.* (1)

- worse or no different" category is negligible
- mean percentage reduction in weighted PAR score is greater than 70%.
- greatly improved category was greater than 40%, suggesting that the Orthodontic Department is treating a substantial proportion of patients with significant malocclusion to high standard of care.

Since there was no significance difference between the gender subgroups, male and female patients were combined for DHC and AC subgroups. Those with higher treatment needs (DHC and AC) show greater percentage PAR improvement but only the subgroups according to AC show significant differences.

CONCLUSION

These findings support the view that the standard of treatment was high and compares favorably with that of other providers of orthodontic treatment internationally.

PAR Index: this present study achieved a high standard of treatment

- The mean weighted PAR reduction was 19.61 $S.D. \pm 7.99$
- The mean percentage improvement was 77.64% $SD 9.9$
- Nomogram showed : Greatly improved category: 44%.
- Improved category: 56%
- worse or no different: No patients fall in this category

REFERENCES

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- 3) Dyke, R. A., & Sadowsky, P. L. (2001). Orthodontic Outcomes Assessment Using the Peer Assessment. *Angle Orthodontist*, 164-169.