An Exploratory Analysis of Levels of Evidence for Articles Published in *Indian Journal of Palliative Care* in the years 2010-2011

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ABSTRACT

Context: Indian Journal of Palliative Care (IJPC) provides a comprehensive multidisciplinary evidence base for an evidence-informed clinical decision making.

Aims: To analyze the levels of evidence of articles published in IJPC in the years 2010-2011.

Settings and Design: Systematic review of palliative care journals.

Materials and Methods: Systematic review of articles was done and was scored according to Center for Evidence-Based Medicine levels of evidence into any of the five grades. The articles were categorized based upon article type, number of authors, study approach, age focus, population focus, disease focus, goals of care, domains of care, models of care, and year of publication.

Statistical Analysis Used: All descriptive analysis was done using frequencies and percentiles, and association between all categorical variables was done using Chi-square test at 95% confidence interval (CI) using Statistical Package for Social Sciences (SPSS) version 16 for Windows (SPSS Inc, Chicago, IL).

Results: There was a greater prevalence of low level evidence (level 4: n = 46, 51%; level 5: n = 35, 39%) among the 90 selected articles, and article type (original articles with higher level of evidence, P = 0.000), article approach (analytical studies with higher level of evidence, P = 0.000), domains of palliative care (practice-related studies with higher level of evidence, P = 0.000) and models of care (biological or psychosocial model with higher level of evidence, P = 0.044) had a significant association with the grade of levels of evidence. Association with other factors was not statistically significant (P > 0.05).

Conclusions: The levels of research evidence for palliative care provided by articles published in IJPC were predominantly level 4 and level 5, and there is scope for more high quality evidence to inform palliative care decisions in the developing countries.

Key words: Evidence analysis, Evidence-based palliative care, Evidence hierarchy, Journal analysis, Levels of evidence

It is a well-known fact that there are barriers and difficulties to conduct research in the area of palliative care due to reservation and concerns about ethics and clinical trials on patients nearing the end of their life. This constraint makes research in this niche area more challenging and despite all reservations it is highly desirable to contribute authentic evidence-based treatment developments to the scientific knowledge pool.
– Bhatnagar[1]

Access this article online

Quick Response Code:

Website: www.jpalliativecare.com

DOI: 10.4103/0973-1075.121535

INTRODUCTION

Research in palliative care has grown leaps and bounds which is reflected in both quality and quantity of articles published in peer-reviewed journals.[2] Amongst many other specialties of professional journals such as medical, nursing, and anesthesiology; palliative care journals are reinforcing their responsibility by playing a leadership

role in disseminating evidence for palliative and end of life care interventions.

Evidence for palliative care interventions through published articles enables clinicians and healthcare providers to understand, evaluate, interpret, and implement current findings into practice situations. Application of such evidence integrated with professional expertise and patient/caregiver preferences is termed as evidence-based practice (EBP).[3] Knowledge of palliative care research and evidence-base is indicated for an effective multidisciplinary collaborative shared informed decision making.[4]

Evidence-based palliative care relies on four aspects: Existing research evidence in palliative care; access to research evidence and dissemination of evidence; knowledge and skills in critical appraisal of evidence; and, in implementing evidence-based information into palliative care practice.[5] Due to the inability of many systematic reviews of health care interventions to provide conclusive answers, and also because the relevant RCTs simply do not exist or are of poor quality; clinician's wealth of experience-based knowledge is extended to provide an evidence-informed palliative care[6] rather than an evidence-based care.

Levels of evidence are a qualitative method of critical appraisal in which each type of published evidence is graded by its study design. It is commonly used for quality appraisal for inclusion in systematic reviews and evidence-based clinical practice guidelines.[7] Levels of evidence are a simple and an effective tool for critical appraisal which can be used for staffs and care providers in palliative care setting in developing countries. Previous reports on analysis of levels of evidence in journals were either on multiple journals or a single journal.[8]

The evidence for palliative care in developing countries depends upon the role played by Indian Journal of Palliative Care (IJPC) in dissemination of quality evidence to guide practice. IJPC got included in PubMed and its abstracts were indexed from January 2010 onwards. Ever since then, the leader's role in evidence-based palliative care in developing countries is played by IJPC with its motto, "no therapeutic activity should be prescribed unless supported by researched activity".[9]

The objective of this present study was to perform an exploratory analysis of articles published in IJPC and assess them according to levels of evidence, and to associate studies' characteristics and content with the attributed level of evidence.

MATERIALS AND METHODS

Study design

A systematic review and quantitative analysis of articles published in IJPC.

Search methods

Two reviewers independently searched PubMed using specific search strategy and they independently extracted and synthesized the data from selected studies using a structured checklist. At all stages of the review process, disagreements were solved by mutual consensus before proceeding to the subsequent stages of review.

Search strategy and selection criteria

A thorough literature search of PubMed using keywords "Indian Journal of Palliative Care [Journal]" were used in the search tab, for obtaining all types of articles, published and indexed from 1st January 2010 to 31st December 2011. The articles from main issues of the journal would be considered and not the supplement(s).

Data extraction and synthesis

The full-text content of selected citations was examined for their attributes for analysis, as per the structured checklist.

Levels of evidence

The Center for Evidence-Based Medicine (CEBM)[10] levels of evidence grading was utilized for our analysis which constitutes as shown in Table 1.

Levels of evidence was associated/correlated/compared with/between number of authors, country of author, article type (original article, other), article approach (descriptive, analytical), population age (adult, pediatric), study

Table 1: Center for evidence-based medicine levels of evidence

Level	Sublevel	Study design
1	A	Systematic reviews and/or meta-analyses of randomized controlled trials
	B	Randomized controlled trials
2	A	Systematic reviews and/or meta-analyses of cohort studies
	B	Cohort studies/non-randomized clinical trials
3	A	Systematic reviews and/or meta-analyses of case control studies
	B	Case control studies
4		Case series, cross-sectional studies, case reports, laboratory studies
5		Expert opinions, clinical commentaries, narrative reviews, letters to editor, editorials

focus (patient/caregiver, professional, student), disease focus (cancer, HIV/AIDS, other, mixed), goal of care (diagnosis, prevention, treatment, prognosis, mixed), palliative care domain (practice, education, research, administration), model of care (biological, psychosocial, biopsychosocial), and year of publication (2010, 2011).

Data analysis

All descriptive analysis was done using frequencies and percentiles, and association between all categorical variables was done using Chi-square test at 95% confidence interval (CI) using Statistical Packages for Social Sciences (SPSS) version 16 for Windows (SPSS Inc Chicago, IL).

RESULTS

Our initial search yielded 111 citations and we excluded 21 articles which were published in a supplement issue in January 2011 as a conference proceeding. Thus we had a final list of 90 articles for our analysis.[11-100]

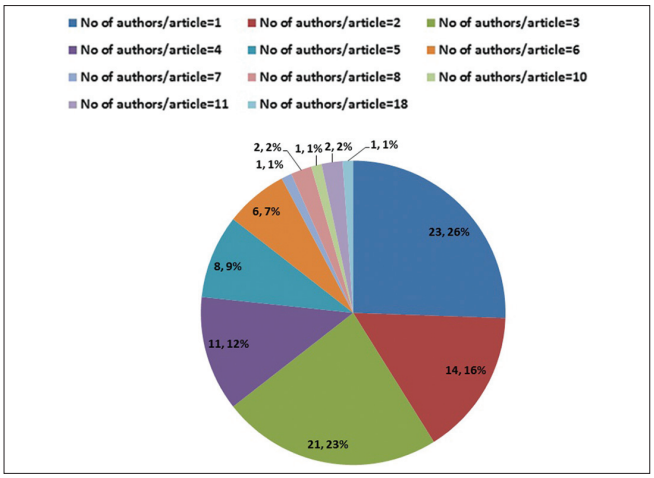

Figure 1: Comparison of number of articles based upon number of authors per article

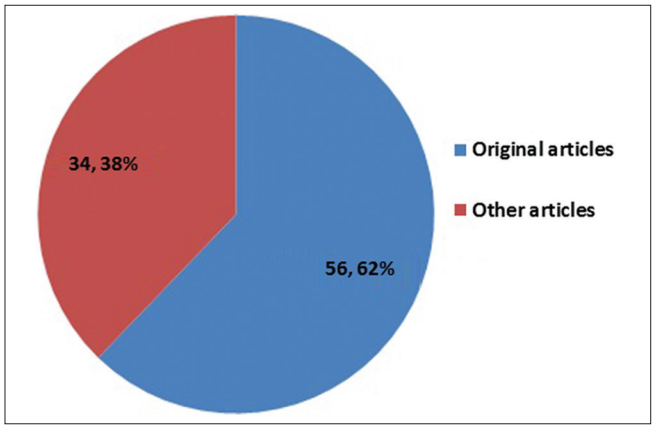

Figure 3: Comparison of number of articles based upon type of articles

The overall descriptive characteristics of the 90 articles with respect to number of authors per article [Figure 1], nationality of corresponding author [Figure 2], type of articles [Figure 3], type of study approach [Figure 4], study designs [Figure 5], target population [Figure 6], population focus [Figure 7], disease focus [Figure 8], goals of care [Figure 9], domains of palliative care [Figure 10], models of care [Figure 11], years of publication [Figure 12], and levels of evidence [Figure 13] are schematically shown.

Levels of evidence and number of authors per article

There was no significant association between levels of evidence and number of authors per article ($P = 0.293$). The comparison is shown in Figure 14.

Levels of evidence and country of author

There was no significant association between levels of evidence and the corresponding author's

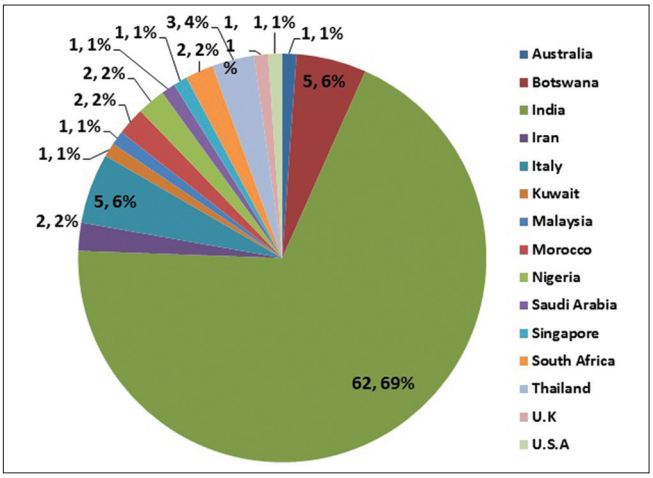

Figure 2: Comparison of number of articles based upon the nationality of corresponding authors

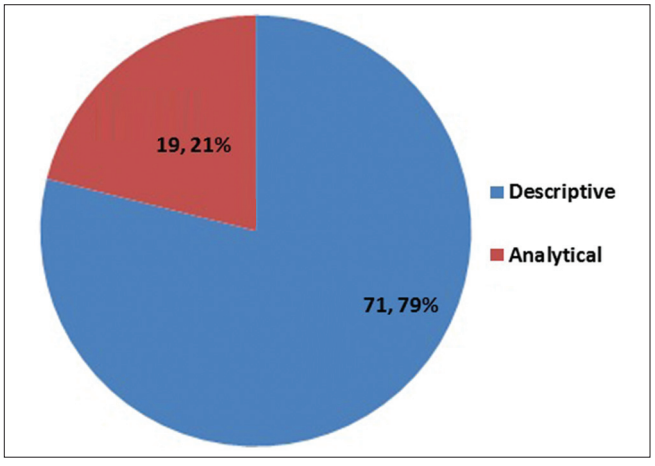

Figure 4: Comparison of number of articles based upon type of study approach

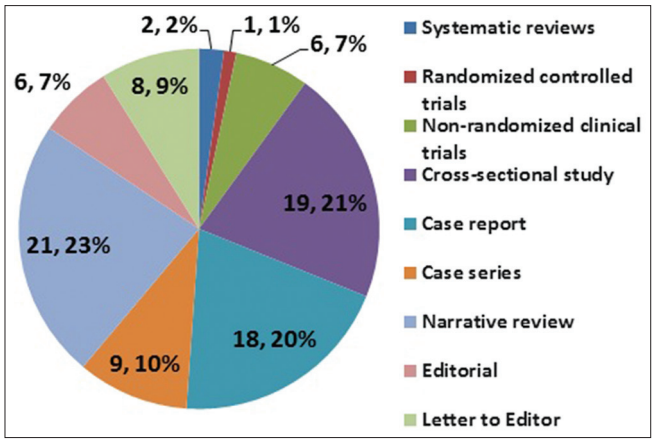

Figure 5: Comparison of number of articles based upon study designs

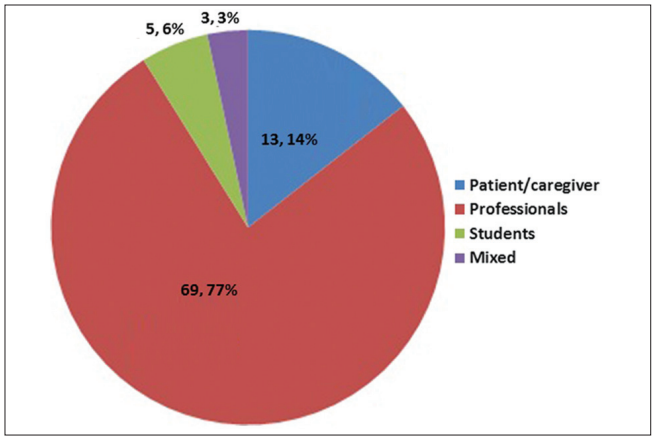

Figure 7: Comparison of number of articles based upon study population focus

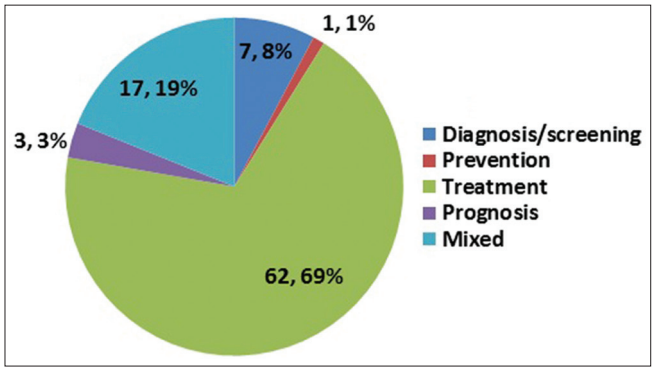

Figure 9: Comparison of number of articles based upon goals of care

country (P = 0.987). The comparison is shown in Figure 15.

Levels of evidence and article type

There was a statistically significant association between type of article and level of evidence (P = 0.000), that is, original articles were likely to be level 4 evidence (45/56) and other articles were likely to be level 5 evidence (33/34). The comparison is shown in Figure 16.

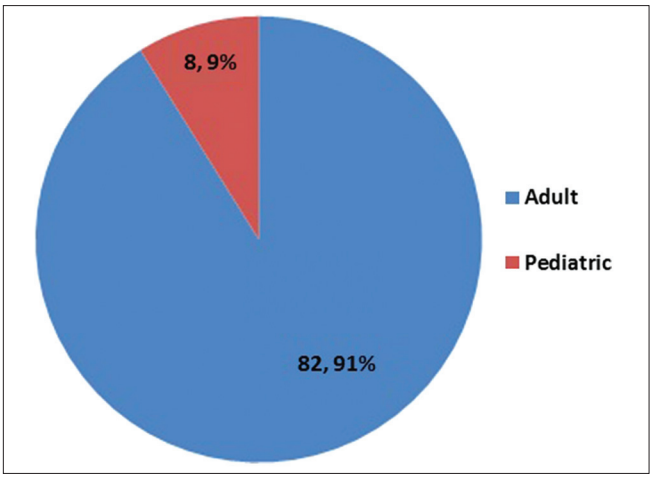

Figure 6: Comparison of number of articles based upon study target population

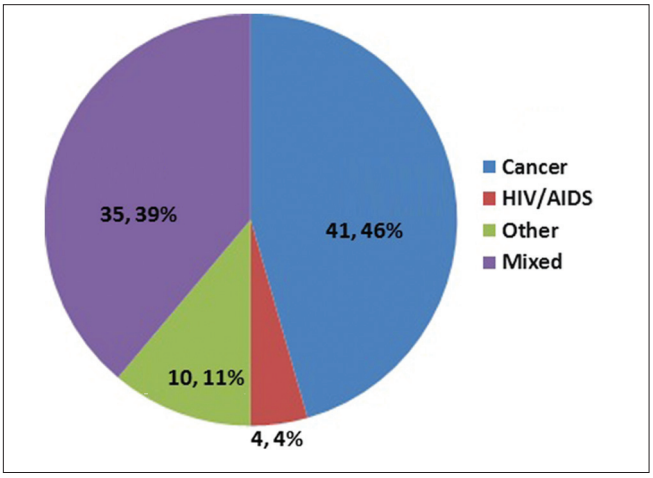

Figure 8: Comparison of number of articles based upon disease focus

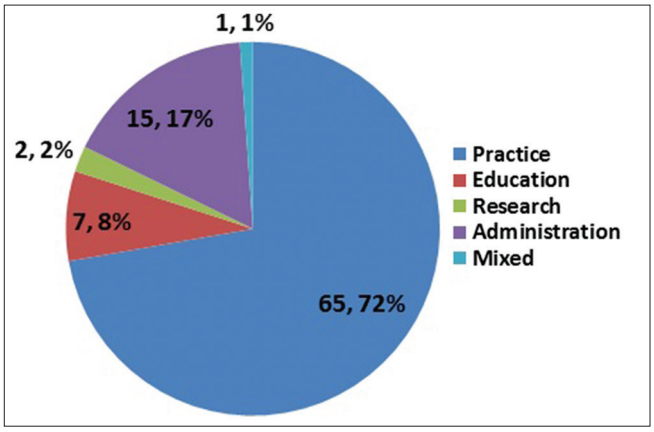

Figure 10: Comparison of number of articles based upon domains of palliative care

Levels of evidence and article approach

There was a significant association between levels of evidence and article approach (P = 0.000), that is, descriptive studies were likely to be levels 4 and 5 evidence

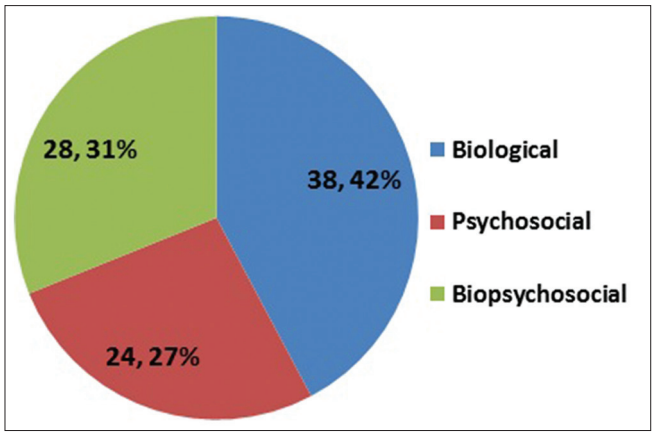

Figure 11: Comparison of number of articles based upon models of care

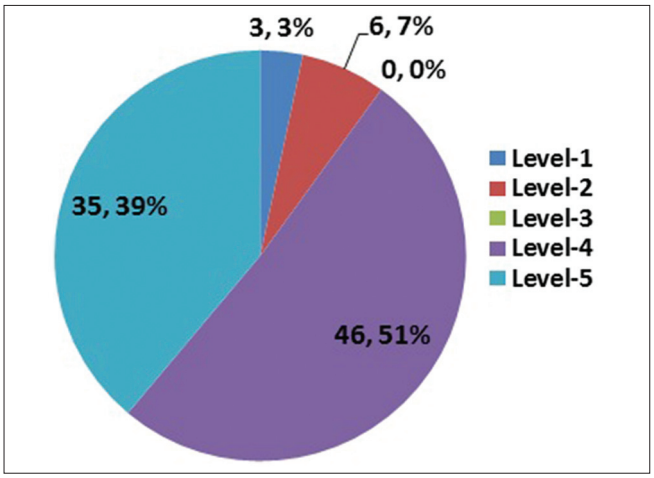

Figure 13: Comparison of number of articles based upon levels of evidence

(37/71 and 34/71, respectively) and analytical studies were likely to be levels 2 and 4 evidence (6/19 and 9/19, respectively). The comparison is shown in Figure 17.

Levels of evidence and population age

There was no significant association between levels of evidence and study population's age focus ($P = 0.156$). The comparison is shown in Figure 18.

Levels of evidence and target population focus

There was no statistically significant association between level of evidence and target population focus ($P = 0.103$). The comparison is shown in Figure 19.

Levels of evidence and disease focus

There was no significant association between levels of evidence and disease focus in the articles ($P = 0.914$). The comparison is shown in Figure 20.

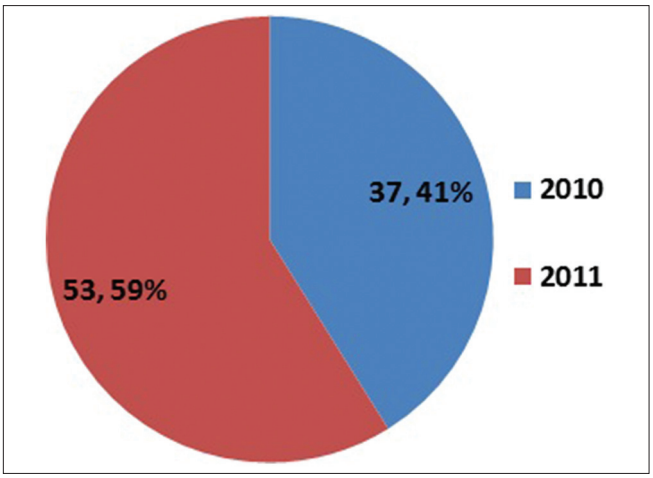

Figure 12: Comparison of number of articles based upon years of publication

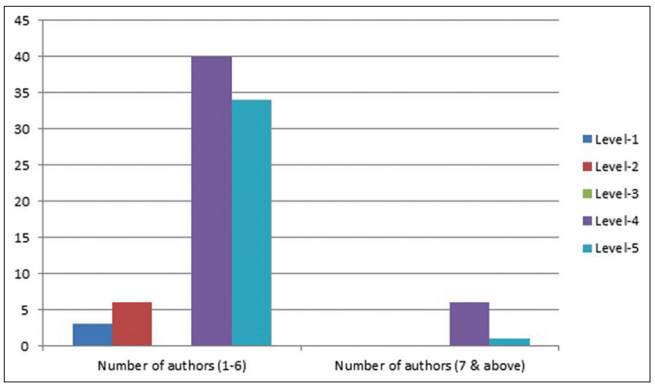

Figure 14: Comparison of number of articles based upon levels of evidence and number of authors per article

Levels of evidence and goal of care

There was no significant association between levels of evidence and goals of care ($P = 0.439$). The comparison is shown in Figure 21.

Levels of evidence and palliative care domain

There was a significant association between levels of evidence and four domains of palliative care ($P = 0.000$), that is, articles on practice were more likely to be levels 4 and 5 evidence (37/65 and 27/65, respectively) and articles on administration were likely to be level 5 evidence (10/15). The comparison is shown in Figure 22.

Levels of evidence and model of care

There was a significant association between levels of evidence and models of care ($P = 0.044$), that is, articles on biological model were likely to be level 4 evidence (23/38), articles on psychosocial model were likely to be level 4 evidence (16/24), and articles

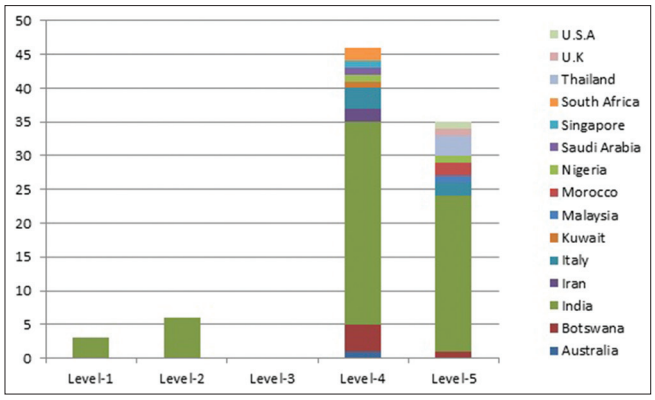

Figure 15: Comparison of number of articles based upon levels of evidence and nationality of corresponding author

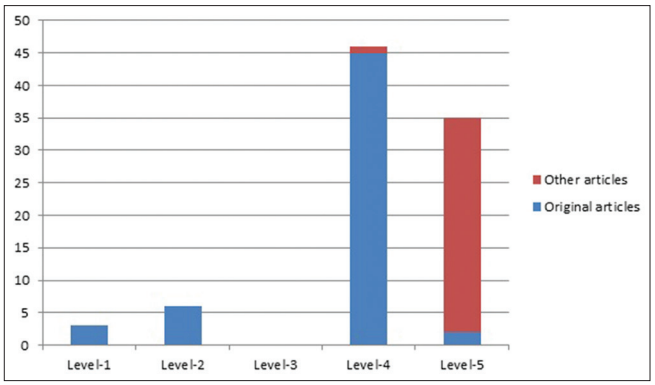

Figure 16: Comparison of number of articles based upon levels of evidence and article type

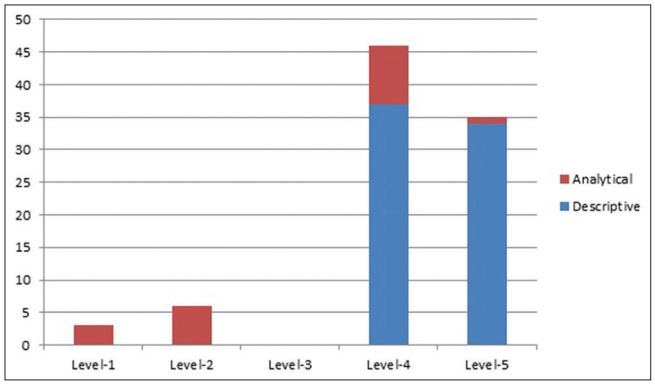

Figure 17: Comparison of number of articles based upon levels of evidence and study approach

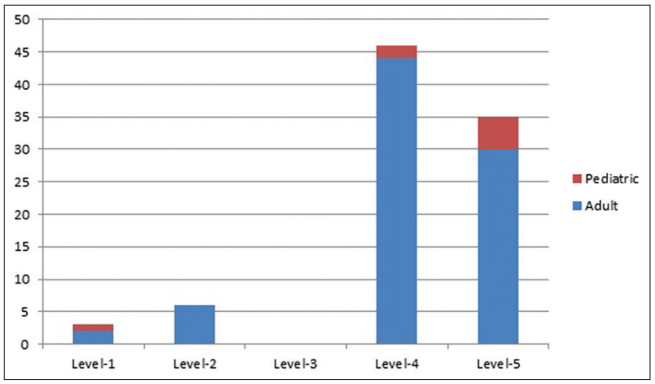

Figure 18: Comparison of number of articles based upon levels of evidence and study population's age

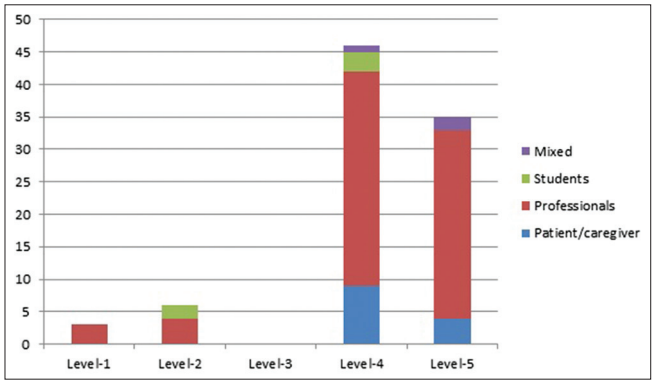

Figure 19: Comparison of number of articles based upon levels of evidence and population focus

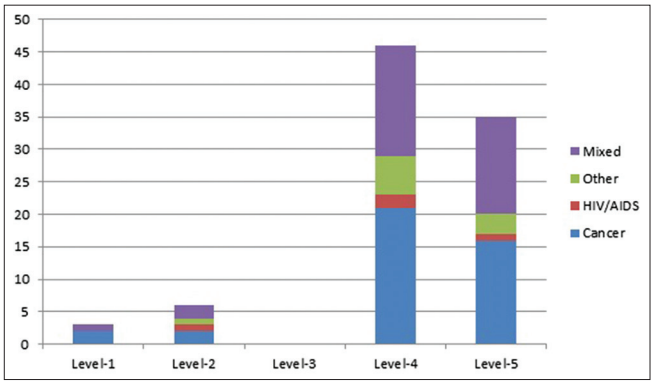

Figure 20: Comparison of number of articles based upon levels of evidence and disease focus

on biopsychosocial model were likely to be level 5 evidence (17/28). The comparison is shown in Figure 23.

Levels of evidence and year of publication

There was no significant association between levels of evidence and year of publication ($P = 0.331$), and although articles at level 4 evidence increased from 17 in 2010 to 29 in 2011, their reporting rates had not (17/37 in 2010 and 29/53 in 2011). The comparison is shown in Figure 24.

Study designs and years of publication

There was no significant association between types of study design and years of publication ($P = 0.470$). There is an increase in number of systematic reviews and randomized controlled trials in 2011 compared to 2010. The comparison is shown in Figure 25.

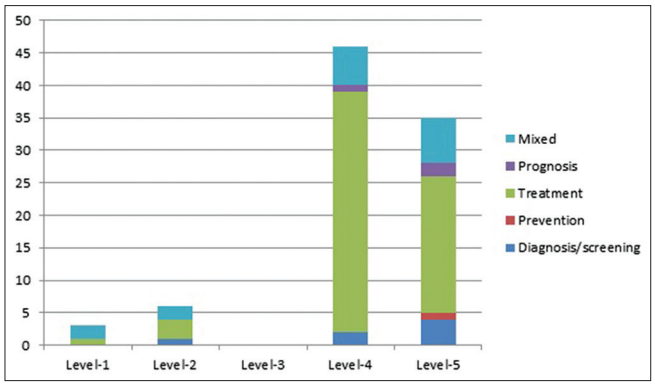

Figure 21: Comparison of number of articles based upon levels of evidence and goals of care

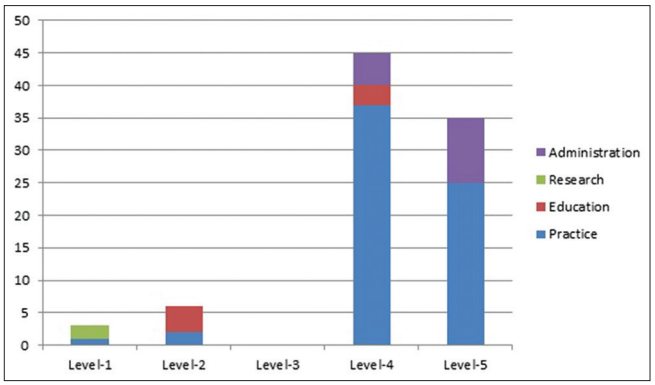

Figure 22: Comparison of number of articles based upon levels of evidence and domains of palliative care

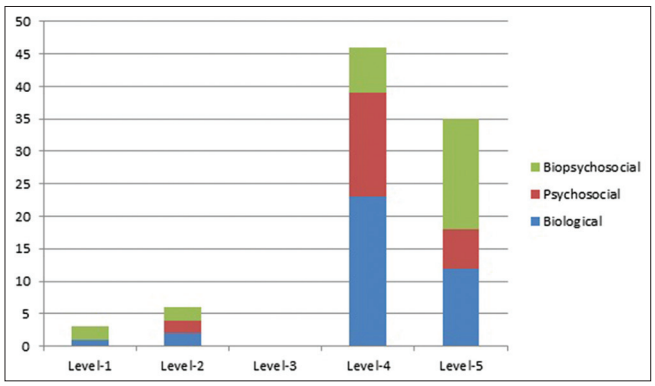

Figure 23: Comparison of number of articles based upon levels of evidence and models of care

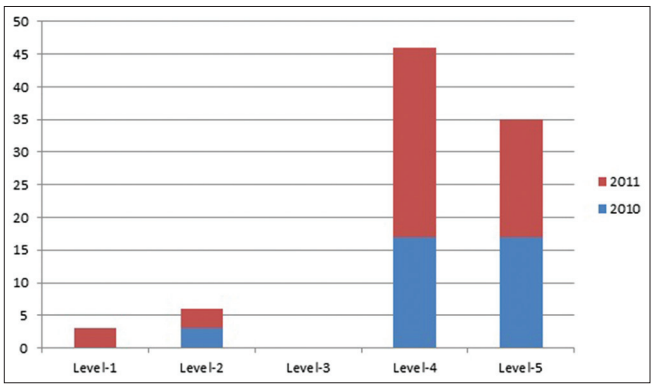

Figure 24: Comparison of number of articles based upon levels of evidence and years of publication

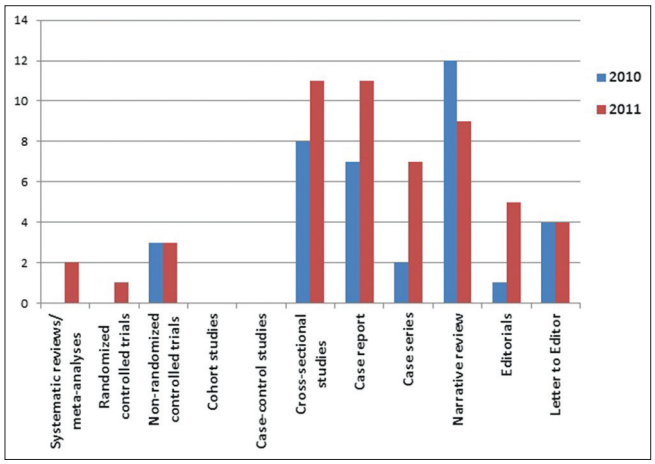

Figure 25: Comparison of number of articles based upon study designs and years of publication

DISCUSSION

This study aimed at exploring the levels of evidence for articles published in IJPC in a 2-year period and found that there was a greater prevalence of low level evidence among the articles, article type, article approach, domains of palliative care, and models of care had a significant association with the grade of levels of evidence; with rejection of null hypothesis.

This is imperative because systematic reviews and randomized controlled studies were published as original articles, since they adopted an analytical approach.

The individual journals previously analyzed for levels of evidence were Journal of Bone and Joint Surgery-American (JBJS-A) and International Journal of Oral and Maxillofacial Surgery (IJOMFS; Kumar and Sisodia, 2012).[8] In the study by Hanzlik *et al.*, (2009)[101] the authors reviewed JBJS-A articles across a 30-year period from 1975-2005 at four time-points of 10 year intervals and they found a trend towards increase in combined reporting rate of levels 1-3 evidence.

This present study found 3, 7, 0, 31, and 59% reporting for levels 1, 2, 3, 4, and 5; respectively. Lau and Samman's[102] (2007) findings were similar to this study in their analysis of IJOMFS where they found 0, 2, 8, 40, and 50% reporting for levels 1, 2, 3, 4, and 5; respectively. Bhandari *et al.*,[103] (2004) found that the majority (69%) articles published in a 6-month period from January-June 2003 were studies of therapy, and 57% of the studies constituted level 6 evidence, which was again very much in agreement with our study's findings.

Influence of practice-related articles on levels of evidence is also not unexpected considering the overall higher prevalence of such articles in IJPC. Another influencing factor was the model of care and it was indeed surprising to note that articles along either biological or psychosocial model scored a higher level than biopsychosocial model. This could be explained in terms of relatively recent development of concept of behavioral model of chronic pain (Prem *et al*., 2012),[21] which the authors and experts had emphasized in their narrative reviews and editorials, and the trend is likely to be reversed with more randomized controlled trials along the biopsychosocial model in the near future.

The study had interesting observations; the four papers from Italy had ten authors or more per article, which questions further details on the role of contributors in those studies. International Committee of Medical Journal Editors (ICMJE) had listed a requirement of not more than six authors in a single-center study. This throws a suggestion on development of research co-operative groups and also a question on haunted authorship which should be appropriately addressed by including a 'role of contributors' section in articles (Leblanc *et al*., 2012).[104]

This study did not specifically aim to explore authorship characteristics, referencing and citation, or statistics used in the articles; and there is much scope for such research in the future.

The null hypothesis was substantially accepted in case of other factors by the lack of significant association of levels of evidence with other factors related to the articles. We initially presumed that Indian authors would have had published more level-specific evidence due to higher reporting of articles from this subcontinent. Interestingly, both systematic reviews and one randomized controlled trial were from India, although it did not reach statistical significance. There was greater number of studies with less than three authors, and earlier studies reported higher quality of published articles with greater number of authors, and this warrants future research on interprofessional training and educational interventions in this part of the globe.

This study was performed in articles on IJPC and future studies could be indicated along these lines, in other journals where active palliative care researchers publish their work (San-Miguel *et al*., 2011).[105]

Evidence-based medicine (EBM) is not an old hat, a "cookbook" medicine perpetrated by arrogant to serve cost cutters to suppress clinical freedom, a mandatory, deterministic, totalitarian practice of medicine, a way to control cost and to ignore patient preferences, a limit to personal/humanistic/individual medicine. EBM is a reference of excellence to guide clinical decisions, the integration of own expertise with others' expertise and patient preferences, a way to improve medical practice and limit the variability and errors created when there is no evidence to identify the gold standard and differentiate among alternatives available.
– Freddi and Roman-Pumar[106]

CONCLUSION

There is a positive trend towards increase in number of published articles with high level of evidence in IJPC. The overall level of research evidence for palliative care provided by IJPC is low, and there is an urgent need for more high quality evidence to inform clinical palliative care practice in the developing countries.

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How to cite this article: Kumar SP, Sisodia V. An exploratory analysis of levels of evidence for articles published in *Indian journal of palliative care* in the years 2010-2011. Indian J Palliat Care 2013;19:170-9.

Source of Support: Nil. **Conflict of Interest:** None declared.