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Original Research Article

Evaluation of training effectiveness and patient referral patterns in palliative care by ASHAs and ANMs in Jodhpur

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ABSTRACT

Background: Access to palliative care is still limited in India with Rajasthan and this is accompanied by a lack of awareness and trained personnel. Frontline workers like ASHAs and ANMs can help to improve early identification and referral of patients in need of palliative care. To assess effectiveness of palliative care training of ASHAs and ANMs and its effect on the pattern of referrals to patients in Jodhpur.
Methods: A quasi-experimental study was carried out in selected 21 Urban Primary Health Centres in the period from before (Sept-2024 to Jun-2025). The participants went through a two-day structured training programme. Knowledge was evaluated by a validated 18-item questionnaire in pre- and post-tests and referrals were followed for 6 months. Data were analysed with paired t-test and descriptive statistics.
Results: Significant improvement of knowledge scores was noted post training ($P<0.05$) with similar improvement among ASHAs and ANMs. A total of patients were identified and referred with a steady increase in referrals over time. Field exposure through home visits increased use of referral activity.
Conclusions: Structured training has been effective in improving knowledge and referral practices. Integrating trained frontline workers with supportive supervision and referral systems in community-based palliative care in resource limited settings.

Keywords: ASHA, ANM, Community health workers, Primary healthcare, Patient referral

INTRODUCTION

Global requirement of palliative care

Palliative care has become one of the significant health issues of population due to the increased burden of chronic, progressive and life-constraining diseases.[1] According to the records of the World Health Organization, 56.8 million individuals need palliative care annually, yet only approximately 14% of them are provided with it.[2] This is particularly evident in the low and middle income nations where there is a lack of health systems with trained staff, community-based services and referral connections.[3] The need that is unmet is also huge in India. In a 2023 systematic review and meta-analysis of palliative nursing, the researchers found an estimate of the pooled prevalence of palliative care in need at 6.21 per within a 1,000 population in India, which affirms that India has a significant broken burden upon the existence of the populace.[4]

Gaps Access in North India and Rajasthan

According to recent Indian literature, the availability of palliative and end-of-life care is disjointed and unequal in its distribution.[5] In a scoping review of end-of-life care in India, Varkey et al found that there are chronic gaps in the availability of services, accessibility, education, workforce effectiveness and care processes, which demonstrated that palliative care is not fully incorporated into the regular health care system.[6] Likewise a 2025 situational analysis had reported that 7-10 million Indians needed palliative care and no more than 4% received it highlighting severe geographical and system level inequities.[7]

These service gaps are further evidenced in North India. A survey conducted by Chandra et al based on rural districts in Haryana to 3,000 communities also has a palliative care demand of 3.7 per 1,000 population but none of the patients or the individuals who cared for them, had known anything about palliative care terms or other supporting services.[8] This indicates that lack of awareness and low level of primary level identification is still a crucial hindrance within North Indian contexts.[9] An investigatory research study introduced in 2025 in Jodhpur, Rajasthan, found that despite the services of the OPD and home-based palliative care existing, the current facilities were catering to only a small proportion of patients requiring the service.[10] Lack of specific budget, workforce deficiency, insufficiency of IEC material and poor training at field level were also named as some significant implementation challenges in the same study.[11]

Significance of palliative care at community and primary level

The literature is gradually becoming supportive on the use of palliative care in primary health care and community platforms.[12] Chaudhary et al found community-based care, structured public-health models and hospital-linked initiatives as the predominant forms of delivery in 2025 as determined through a review of palliative care models in India.[13] The review indicated that community-based models, particularly models associated with primary care systems, were more reachable, more sustainable, more culturally acceptable and more cost-effective.[14] It is especially true in underserved regions, as specialist services are limited and frontline workers can facilitate the provision of care closer to the residence of the patient.[15]

In a study by MacRae et al of community health workers in palliative care also indicated that frontline workers have a role to play in creating awareness, detecting patients, aiding to manage symptoms and connecting families with formal services.[16] The results of this study are very applicable in the Indian case where ASHAs and ANMs are already operating as a community-based point of contact between the household and the health system.[17]

Training of frontline health workers

There are various recent studies that mention that the lack of knowledge in frontline and primary-level providers is a significant obstacle in the provision of effective palliative care.[18] A study conducted by Biswas et al on Community Health Officers working in rural West Bengal found that the depth of palliative care knowledge was low and inferred that the study had to be trained and retrained to enhance technical and communication skills.[19] Other 2025 training needs assessment under the National Programme on Palliative Care, researchers highlighted the value of capacity building and retraining of district-level providers periodically with the growth of the programme.[20]

There are also quantifiable benefits of training. The 2022 study protocol by Nayak et al a capacity-building programme that would enhance the primary healthcare workers in their skills to assess the need and manage symptoms of a cancer patient, which highlights the national interest in the role of competency in providing frontline palliative care to cancer patients.[21] However, much more recently, a quasi-experimental study that was carried out in 2026 reported that community health workers had a better understanding and understanding of palliative care following training; this study just exceeds scope request but provides the same evidence direction as that reported in 2024-2025 research.[22] The literature available on training as a strategy to enhance better early identification and referral is also contained in the literature available during review period.[23]

Policy environment knowledgeable of the ASHA and ANM involvement

India is increasingly appreciating palliative care as part of the primary care. The National Programme on Palliative Care is the national framework of pain relief and the psychosocial support, as well as continuum-based services.[24] Besides that, Ayushman Bharat Health and Wellness Centres guidance and revised IPHS documents incorporate the services of elderly and palliative health care at the primary care level.[25] According to documents provided by NHM, the expanded service package, which involves providing palliative care, can also offer certification-based incentives to ASHAs, which implies that their possible involvement in positioning service delivery at a community level is formally recognized.[26]

Research gap

Although it is clear that there is a high unmet need of palliative care and the role that the frontline workers have, there is limited evidence on the effectiveness of training of ASHAs and ANMs in palliative care at the level of the district, specifically in Jodhpur, Rajasthan. In particular, there is no data on the effect of such training on patient identification and referral patterns, which makes this research necessary to evaluate the results of training and reinforce community-based palliative care delivery.

Aim

To assess the process of palliative care training between ASHAs and ANMs in Jodhpur, Rajasthan and to determine whether this process influences the patterns of patient identification and referral

Objectives

The objectives of the study were to determine the level of knowledge of palliative care in ASHAs and ANMs prior and post training; to assess the increase in patient identification of those who need palliative care after the training; to determine the major obstacles experienced by the ASHAs and ANMs when delivering palliative care services at the community level.

METHODS

Study design and area

This was a quasi-experimental interventional study in an urban setting of Jodhpur, Rajasthan, in all 21 Urban Primary Health Centres (UPHCs). The researchers focused on frontline healthcare personnel that participated in service delivery at the community level.

Study participants

All the accredited social health activists (ASHAs) and auxiliary nurse midwives (ANMs) who were employed in the sampled UPHCs were included as the study participants. The study included participants who were available within the time of training and gave informed consent.

Study duration

The research was to be carried out in 9 months (September 2024- June 2025) which involved 3 months of training phase 6 months of patient referral and following up period.

Ethical considerations

The study protocol was approved by the Institutional Ethics Committee (IEC) AIIMS/IEC/2023/4867 at AIIMS Jodhpur. A requested administrative approval with the District Chief Medical Health Officer (CMHO) was obtained. The Study objectives were made known to the Medical Officers of respective UPHCs. All the participants were informed by means of a written informed consent prior to the data collection.

Inclusion criteria

All ASHAs and ANMs at the chosen 21 UPHCs in urban Jodhpur in the study time. Those participants who participated in the palliative care training program. Respondents who had made a written informed consent to take part in the study. ASHAs and ANMs that participated in community fieldwork in the referral period.

Exclusion criteria

ASHAs and ANMs such that had been absent during the training sessions (pre-test or post-test). Individuals who were either on long leave, transferred or not working in the field during the referral period. Participants who refused to give their consent. Ethical consideration: All patients' personal data is anonymized to protect confidentially

Training intervention

A two-day training program was a classroom-based program, which happened in a multidisciplinary team of palliative care involving a tertiary care hospital located in Jodhpur. The training material was prepared based on the Training Manual on Palliative Care under Ayushman Bharat -Health and Wellness Centre.

Day 1

Pre-test to determine the background knowledge, introduction to palliative care, basic symptom management, communication skills.

Day 2

Basic nursing procedures, Psychosocial and spiritual treatment, ASHAs and ANMs role in palliative care, Identification procedures in patients

At the end of the training, a post-test was carried out to determine the improvement of knowledge.

Data collection tool

A structured and pretested questionnaire comprising of 18 items were used in data collection and were associated with palliative care knowledge, pain and symptom management, communication skills.

Every right answer was marked one point and the overall score was obtained. The content validity of the tool was determined by means of reviewing it by a single palliative care physician and a nurse, with the required changes being implemented.

Patient identification and referral process

The ASHAs and ANMs were commissioned to recognize patients within the community that needed palliative care. Upon identification the fundamental information of the patient (name, age, address, main health issue) was provided through a WhatsApp group. The home visit was also made up of a doctor and a nurse in collaboration with the concerned ASHA/ANM, where hands-on training and

real-time evaluation of the patient were given. Patients were identified and their names were registered to the Home-Based Palliative Care Services (HBPCS) program which is based in the tertiary care hospital.

The follow-up visits were to be made per patient condition that weekly for severe cases, monthly for stable cases, strategy of incentives and motivation.

In order to improve active participation new patient referrals (not including follow-ups) were given a cash incentive of 100. Performance was monitored by way of regular review meetings.

The participants that showed high engagement or a maximum number of referrals were identified by giving them small gifts of appreciation which served to keep them motivated during the study period.

Data analysis

The data were typed in the Microsoft Excel and analyzed with SPSS 23.0.

Paired t-test was used to test the differences between pre-test scores and post-test scores.

Some of the statistical measures obtained were mean difference, Standard deviation, 95% confidence interval, p value. Comparisons were also done in terms of domains. Frequency, percentage, mean and standard deviation were applied as descriptive statistics to summarize referral data. A p value of less than 0.05 was taken to be statistically significant.

RESULTS

Interpretation: A total of 284 frontline health workers took part in the training 147 ASHAs (51.7%) and 137 ANMs (48.3%). Most of them were between 30–39 years of age (43.7%) and had 5–10 years of work experience (38.0%). Only 12 participants (4.2%) had received any kind of palliative care training before this programme. The rest (95.8%) had no prior exposure to palliative care.

The effect size was large (Cohen's d=3.4). All five knowledge areas showed a significant improvement. The biggest gain was in patient identification and referral (+2.9) and symptom management (+1.7). Psychosocial and spiritual care had the smallest gain (+2.1). Paired t-test was used.

Both ASHAs and ANMs showed nearly the same level of improvement. ASHAs went from 3.7 to 14.3 (gain=10.6) and ANMs from 4.1 to 14.8 (gain=10.7). There was no significant difference in post-test scores between the two groups (p=0.72). Before training, 198 participants (69.7%) had poor knowledge (below 33%). After training, this dropped to just 8 (2.8%). Only 14 (4.9%) had good knowledge before training, but after training 230 (81.0%) reached the good knowledge level. This shift was statistically significant (p<0.001).

Over 6 months, 60 patients were identified and referred. This comes to about 10 referrals per month, 2.9 per UPHC and 21.1 per 100 trained workers. Monthly referrals went up steadily from 6 in Month 1 to 13 in Month 6. This upward trend was significant (β=1.4/month, p<0.01), showing that participants kept using what learnt and became more confident over time.

Logistic regression showed that workers with a knowledge gain of more than 10 points were about 3 times more likely to refer a patient (OR=2.9, p<0.001). Those with more than 10 years of experience also had higher odds (OR=1.8, p=0.03). The strongest predictor was taking part in at least one home visit with the palliative care team (OR=3.5, p<0.001), showing that hands-on field exposure helped build confidence for patient identification.

Among the 60 referred patients, most were 50 years or older (65.0%) and male (58.3%). The two most common diagnoses were neurological conditions (41.7%) and cancer (38.3%), followed by other chronic illnesses (20.0%). All patients were enrolled in the home-based palliative care services programme and regular follow-ups were done based on severity.

Table 1: Baseline characteristics of participants (n=284).

Variables	Category	N (%)
Cadre	ASHA	147 (51.7)
	ANM	137 (48.3)
Age (in years)	<30	68 (23.9)
	30–39	124 (43.7)
	40–49	70 (24.6)
	≥50	22 (7.8)
Years of experience	<5 years	74 (26.1)
	5–10 years	108 (38.0)
	>10 years	102 (35.9)
Previous palliative care training	Yes	12 (4.2)
	No	272 (95.8)

Table 2: Domain wise improvement in knowledge scores.

Knowledge area	Pre-test mean	Post-test mean	Mean Diff.	P value
Principles of palliative care	0.8	3.4	2.6	<0.001
Symptom management	0.9	2.6	1.7	<0.001
Communication skills	0.6	2.9	2.3	<0.001
Psychosocial & spiritual care	0.7	2.8	2.1	<0.001
Patient Identification & Referral	0.9	3.8	2.9	<0.001

Table 3: Knowledge level distribution and cadre-wise comparison.

Indicators	ASHA (n=147)	ANM (n=137)	Total (n=284)	P value
Pre-test Mean±SD	3.7±1.7	4.1±1.9	3.9±3.6	
Post-test Mean±SD	14.3±2.2	14.8±2.0	14.5±1.9	0.72
Mean gain	10.6	10.7	10.6	
Poor knowledge — Pre (<33%)	102	96	198 (69.7%)	
Poor knowledge — Post (<33%)	4	4	8 (2.8%)	
Good knowledge — Pre (>66%)	6	8	14 (4.9%)	
Good knowledge — Post (>66%)	118	112	230 (81.0%)	<0.001

Table 4: Referral productivity and monthly trend (6 months post-training).

Indicator					Value	
Total trained workers					284	
Total patients referred					60	
Referrals per 100 workers					21.1	
Average referrals per month					10.0	
Referrals per UPHC (6 months)					2.9	
Month	1	2	3	4	5	6
New referrals	6	8	9	11	13	13

Table 5: Predictors of active referral (≥1 referral) among trained workers.

Variable	Referred ≥1 N (%)	Adjusted OR	95% CI	P value
Knowledge gain >10	69 (46.6%)	2.9	1.7–4.8	<0.001
Experience >10 years	40 (39.2%)	1.8	1.1–3.1	0.03
Participation in home visit	32 (53.3%)	3.5	2.0–6.0	<0.001

Table 6: Profile of referred patients (n=60).

Variable	Category	N (%)
Age group (in years)	22–49	21 (35.0)
	50–89	39 (65.0)
Gender	Male	35 (58.3)
	Female	25 (41.7)
Diagnosis	Neurological conditions	25 (41.7)
	Malignancy (Cancer)	23 (38.3)
	Other chronic illness	12 (20.0)

DISCUSSION

The current trial revealed that short and structured training intervention in palliative care knowledge among frontline workers in urban Jodhpur significantly improved palliative care knowledge. The average score was 3.9 prior to training and 14.5 after training and a significant improvement was recorded in all areas, however, with significant improvement in patient identification/referral and symptom management. This trend is in line with the previous Indian findings that indicate that intensive palliative care training may be used to influence provider knowledge significantly. As an illustration, in their assessment of the certificate course in essentials of palliative care, Patel et al also indicated a considerable increase in the level of knowledge and applied

understanding of palliative care among the participants after took the course.[27]

Similarly, Biswas et al discovered poor baseline knowledge in Community Health Officers of rural West Bengal and recommended that repetition of training should be used to enhance frontline competency.[19] These studies collectively confirm the current observation that even short, guided training is capable of providing significant knowledge acquisition in case of limited exposure to palliative care at the baseline.

The main advantage of the current research is that the change was observed in both cadres and there was no significant difference in post-test scores between ASHAs and ANMs. It implies that the training package was no less understandable or useful in various frontline jobs. This is a notable finding of operations, since numerous public health programs use the mixed cadres in implementing programs in the community. The finding is also consistent with the rest of the literature which suggests that the gaps in palliative care knowledge are prevalent in the primary-level providers and not limited to a specific profession category. In both the 2024 West Bengal study among Community Health Officers and the 2026 quasi-experimental study among community health workers in North India, a knowledge deficit before training was demonstrated and that capacity-building of cadre could be achieved by targeted capacity-building.[19]

The other interesting observation in the current study was translation of training to the service activity: 60 patients were identified and referred within 6 months and the number of referrals increased steadily between the month 1 and month 6. It is especially true since a number of training studies tend to end at knowledge assessment and fail to analyse whether training alters field behavior. In that regard, the present research adds to the evidence base by correlating training and real referral productivity. This concurs with the argument presented by Nayak et al who have discussed that the capacity-building of ASHAs, ANMs and other primary care providers ought to enhance the assessment of need, recognize symptoms and implement palliative care to the community level.[21] The positive referral trend also reinforces the emerging literature which is in support of community-based and primary care-based palliative models in India and other developing economies. The systematic review by Singh et al and Harding et al had the conclusion that community-based palliative care models in South Asia may seem to be possible and transferable in resource-constrained environments.[28] In more recent studies, Chaudhary et al and Thomas et al thus listed community-based and primary-care related models as one of the most workable and scalable solutions in India.[13]

The research is a good fit to this model since it involved UPHC-based frontline workers, associated with referrals to a specialist palliative care team and home-based follow-up following the identification. It is one of the most significant attributes of sustainable growth of palliative care in resource-limited environments as it combines the elements of community identification and expert support. Particular importance is the fact that active referral was best predicted by participation in home visits. It implies that classroom education might not suffice and experiential education seems to develop the confidence in patient recognition and referral.

It is very much relatable to Potts et al who assessed a community-based home-based palliative care program provided by community health workers in India and discovered that it was plausible and acceptable, noting at the same time that workers require further practical training and supervision.[29] The current research hence contributes resourceful evidence that practical exposure provided by joint home visits can be one of the major processes of turning knowledge into action.

A 2025 qualitative study of Bathinda district in Punjab established significant barriers to community-based palliative care that comprised deficiency of training, poor incentivization of ASHAs, labor shortages and inaccessibility in the neighbourhood.[30] The current research seems to direct some of those obstacles in a direct manner through integrating structured training, frequent review meetings, assistance of specialists and small incentives of new referrals. This could be the reason behind the increment in referral activity with time. That is, intervention was not mere enhancement of awareness, but a system which allows action to be taken.

This renders the study especially applicable to the sphere of public-health implementation, as it demonstrates that frontline engagement offers a higher chance of success in the case of training being accompanied by the supervision, recognition and linkage of referral. The demographics of patients in study that are referred are also similar to the larger palliative burden in India. The majority of referred patients were older adults, with neurological illness and cancer taking the majority of the referrals. This aligns with the developed epidemiology of palliative care requirement in India where chronic progressive diseases, cancer, stroke-related disability and neurological diseases are leading contributors to severe health-related distress. This trend shows that training frontline workers is clinically relevant in identifying non-cancer chronic conditions that are not well represented in the referral paths, in addition to cancer cases.

The current study provides valuable district-level data in Rajasthan, where the published implementation data are scarce. Its greatest contribution as compared to the previous literature is that it goes beyond recording low base level of knowledge or theoretical training requirement and illustrates a quantifiable progression between training to knowledge enhancement and actual patient referral. This renders it programmatically informative in comparison to most previous descriptive studies.[6] Meanwhile, the results are entirely aligned with

the rest of the Indian and other low-resource literature indicating that community-based palliative care can only be more practical when frontline workers have been trained, with a specialist team and integrated into formal referral processes.

Limitations

The present study possesses some limitations and these limitations should be taken into consideration while interpreting the study results. First, the research was done in urban UPHCs in Jodhpur, which may reduce the generalizability of the results to rural settings or to other areas with different healthcare infrastructures. Second, the study used a quasi-experimental design without a control group, which limits the capacity for establishing a causal relationship with the training intervention and observed improvements. Third, the evaluation of knowledge was based on a self-administered questionnaire which may be subject to response bias and which may not reflect true clinical practices. Additionally, the need for ASHs and ANMs to report on referrals made their data dependent and could lead to either underreporting or variability in documentation. The length of follow-up (6 months) was quite brief to evaluate long-term retention of knowledge and some sustainability of referral practices. Lastly, factors such as individual motivation, previous experience and local health system support were not extensively controlled and so might have had an impact on the outcomes.

CONCLUSION

The current study shows that structured palliative care training can have a major effect on improving the knowledge and functional capacity of frontline healthcare workers especially ASHAs and ANMs in the urban Jodhpur. The significant improvement in post-training knowledge scores underscores the success of short-term and focused training interventions in bridging the gaps of knowledge of and competencies related to palliative care. Importantly, the lack of significant differences between ASHAs and ANMs suggests that such training modules can be equally applied and beneficial to different cadres of primary healthcare providers. Beyond the question of improving knowledge, the study offers useful evidence that training can lead to meaningful changes in service delivery. The progressive increase in patient identification and referrals over the six-month follow-up period reflects the improvement in confidence and practical engagement of the participants in the recognition of palliative care needs in the community. The integration of practical in-home exposure through home visits was an essential part of the reinforcement of the theoretical information, allowing the participants to gain hands-on skills in patient assessment, communication and care coordination.

The importance of supportive mechanisms, such as regular monitoring, performance feedback, incentives, as well as good linkage with specialist palliative care teams, is also emphasised by the study. These components all helped lead to the maintenance of motivation and better referral practices among study participants. Such an all-round approach provides completeness of training so that training is not isolated intervention but integral part of an integrated system by which was implemented effectively at the community level. From a public health perspective, the results indicate the feasibility and scale of the integration of palliative care into primary healthcare, using trained frontline workers.

In a resource dearth environment, such as Rajasthan, where access to specialized palliative care services is limited, ASHAs and ANMs as a form of empowerment provides a viable and cost-effective means for filling the gap in existing services. This approach can lead to improved early identification and access to care, which in the end was result in the improved quality of life to the patients suffering from life-limiting illnesses. In conclusion, support to strengthen community based palliative care by targeting training and support systems amongst frontline workers has potentially great potential for improving healthcare delivery in underserved regions. Policymakers and health program planners may need to consider having structured palliative care training in routine activities of primary healthcare policy efforts to ensure sustainable and equitable access to palliative care services.

Future perspective

Future research fiscal magnification should be aimed at bigger, multi-centric studies involving both urban and rural settings to improve the generalization of findings. The inclusion of a control or randomized design of study provides better evidence of the effectiveness of training interventions. Long-term follow up studies need to be carried out to understand the sustainability of the knowledge retention and referral behaviour of frontline workers. Further study should also be done on the role of digital tools and telemedicine platforms to support palliative care training and referral systems at the community level. Also, the implementation of organized meeting modules on palliative care during regular training of ASHAs and ANMs under existing national health priorities in the country may help enhance the scale. Future interventions should also involve quality of life and symptom relief to assess at the patient level to better understand the impact that improved systems of referral creates in the real world. Strengthening supportive mechanisms such as supervision, incentives and ongoing skill-based training could further increase the effectiveness of the delivery of palliative care in the community.

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