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Fostering Future Healthcare Leaders: An Interventional Study on Internal Medicine Residents

Iffat Khanum

iffat.khanum@aku.edu

Aga Khan University

Shazia Babar

Aga Khan University

Muhammad Shahid khan

Aga Khan University

Syed Ahsan

Aga Khan University

Muhammad Tariq

Aga Khan University

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Abstract

Background

The leadership skills of physicians significantly enhance patient care by utilizing clinical expertise and fostering collaboration with multidisciplinary teams. Physicians emerge as healthcare leaders without prior formal training, showcasing their proficiency in diverse leadership positions. The objective of this study is to explore the perceived change in the behaviors of residents after the introduction of a leadership development workshop in the Internal Medicine residency program.

Method

A quasi-experimental study was conducted at Aga Khan University Hospital, Pakistan, in 2023. Interactive workshops were conducted for internal medicine residents. The training effectiveness was evaluated on three of the four levels of the Kirkpatrick evaluation model.

Results

A total of 28 residents (out of 30, 93%) participated in leadership workshops with a mean age of 29 (± 2) years. In the Level 1 Kirkpatrick evaluation, 92.9% of the residents expressed satisfaction with the workshop. Residents at level 2 acquired knowledge (89.3%), intended to advocate for workshops (92.9%), were confident in applying learning to work, recognized leadership importance (85.7%), and felt better prepared for challenges (92.9%). The level 3 assessment revealed notable improvements in residents' perceptions of their leadership skills after the workshops (p value 0.003).

Conclusion

The research underscores the importance of leadership development for residents and continuous engagement in similar programs to foster their leadership skills and competencies over time.

Background

Physicians are assigned leadership positions on the basis of their achievements as clinicians and researchers, often without prior formal training or expertise in leadership skills [1]. Recognizing leadership and teamwork as core competencies for physicians, including undergraduate students and postgraduate trainees, physicians are expected to understand their roles as leaders within the healthcare system.[2] Although some may have the essential qualities required for leadership, a great majority of physicians lack the technical skills necessary for leadership roles. The integration of leadership development programs should be considered at all levels of medical education, from the undergraduate

level to specialty training. Introducing leadership courses in the early years of the medical curriculum is perceived as essential for the success of future physicians [3, 4].

Internal medicine(IM) residents are expected to lead on-call teams and manage patients with complex medical conditions that require comprehensive multidisciplinary care. The on-call medicine team includes attending physicians, senior residents, junior residents, interns, and medical students. The team is often led by a senior resident, who is responsible for managing team dynamics. Residents often face sudden transitions into leadership roles without adequate training or skills. The inadequate leadership skills of senior residents (team leaders) can cause delays and compromise patient care, while poor interpersonal skills can negatively impact junior team members' learning experiences and reduce team motivation.

Although residents are encouraged to lead and improve various aspects of patient care quality, there is little emphasis on developing leadership skills in their curriculum. [5, 6]. Throughout their medical school and training, doctors rarely receive formal training in leadership or teamwork; instead, most of this training is acquired through informal curricula that are taught on the job.[2, 7] Despite the increasing recognition of the importance of leadership skills in clinical practice, team-based leadership in the context of on-call internal medicine teams remains an underexplored area. There is a notable gap in the literature regarding how residents develop and exercise leadership while managing complex patient care and leading multidisciplinary on-call teams comprising fellow residents and nursing staff.

Leadership skills are vital for senior residents, especially when leading on-call teams in the dynamic and high-pressure setting of clinical care. These competencies should be systematically taught and reinforced throughout all stages of residency training. Recognising this need, we conducted a study to examine the perceived changes in the leadership behaviours of internal medicine residents following the implementation of a targeted leadership development workshop.

Methods

A quasi-experimental study design was chosen to be conducted at the Department of Medicine, Aga Khan University Hospital, Karachi, Pakistan, in 2023, to assess any changes in the behaviour of residents after conducting leadership workshops aimed at enhancing their team-based leadership skills. All IM residents from years 3–4 were invited, and residents who were not available due to planned or emergency leave and who did not consent were excluded.

Phase 1

Need Assessment survey

A cross-sectional survey was designed that included demographic data, three sections, including perception about leadership, leadership domains to be included in leadership curriculum for residents

and identification of leadership training opportunities. All residents and consultants in the Department of Internal Medicine were invited to complete the survey after informed consent.

The content validity of the survey was ensured by consulting content experts, senior physicians holding academic roles in healthcare leadership, program directors, associate program directors and chief residents to evaluate the comprehensiveness and relevance of survey items. The reliability of the survey was calculated by Cronbach's alpha.

• Phase 2: Educational strategy

Workshops were conducted for 3^{rd-} and 4th-year residents and involved face-to-face interactive activities, such as case-based discussions. The leadership domains were derived from Sitkin-Lind's six domains of leadership. [8] All workshop facilitators were practising physicians with diverse and extensive experience as teachers and leaders of clinical teams. We also included medical educationists as faculty for workshops. A training session was also conducted for the facilitators before the workshops.

• Phase 3: Evaluation & Feedback

The residents were asked to complete a preworkshop survey on Day 1 of the workshop, followed by a postworkshop survey. Postworkshop evaluations were conducted at two different times: one immediately after completion and another three months later. The effectiveness of the training was assessed through via three of the four levels of the Kirkpatrick evaluation model.[9]

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Data analysis:

The data analysis for this study was conducted via SPSS version 23, which encompasses both descriptive and inferential statistical techniques. The results are presented as the mean ± standard deviation (SD) for quantitative variables, whereas categorical variables are presented as frequencies and percentages. Given that the data did not exhibit a normal distribution, the nonparametric Friedman test was employed to assess the statistical significance of differences among the scores at three distinct time intervals. All p values were computed via a two-sided approach and were deemed statistically significant if they were less than 0.05.

Results

Phase 1 : Results of Need Assessment Survey

A leadership need assessment survey was designed for internal medicine residents that characterizes perception about leadership, the leadership domain to be included in leadership training for residents and preferences regarding leadership training teaching modalities.

A total of 88 residents and consultants participated in the need assessment survey. The majority were female (n 58, 69%) and the mean age of participants was 31(± 8) years. The mean working experience was 6.3(± 6.8) years. Although 35 (41.7%) participants reported that they had prior leadership experience, only 18(21.4%) had received formal leadership training during undergraduate or postgraduate years and 31(36.9%) residents identified themselves as leader in their present circumstances.

A substantial majority of participants (n 63, 75%) expressed a strong belief in the value of leadership skills training for residents during residency. Furthermore, a significant number of participants (n 38, 45.3%) identified having role models for effective leadership in their residency program. Regarding aspiration to assume physician leadership roles in future, 55 (65.5%) aim to acquire leadership positions in clinical settings. Additionally, the majority (n 62, 73.8%) of residents advocated for physicians to not only excel in healthcare areas but also engage in leadership roles in the community.

Among leadership domains required to be included in leadership training of residents, 66(78.6%.) agree with the importance of integrating responsible leadership into the training curriculum. Additionally, 65(77.3%) residents agreed to include the supportive leadership domain. Other domains which were perceived to be important for leadership skills by participants were inspirational leadership (n 65, 77.4.7%), relational leadership (n 55, 65.4%) and contextual leadership (n 54, 64.3%). Personal leadership skills were only considered by a small number of participants (n 49, 58.4%).

Among different modalities of nurturing leadership skills, mentorship (n 65, 77.4%), workshops (n 52,61.9%), academic projects (n 50, 59.5%), leadership portfolio (n 46, 54.8%) were considered important for imparting vital leaderships skills in residents

• Phase 2: Educational strategy

The results are reported following levels 1–3 of Kirkpatrick’s evaluation model

• Preworkshop survey

A preworkshop survey was conducted to evaluate the self-perception of the study participants' leadership skills. A total of 28 residents (out of 30) participated in leadership workshops, with a mean age of 29 (± 2) years; there was a predominance of females (n = 20, 71.4%). More than half (n = 17, 60.7%) of the residents expressed confidence in their leadership skills and felt empowered to lead the on-call team. The majority (n = 22, 78.6%) of the residents believed that they foster a supportive working environment among team members, effectively manage team dynamics (n = 23, 82.1%), motivate the

team to achieve peak performance, and maintain strong relationships among team members (n = 24, 85.7%). Most residents were keen to engage in future leadership development activities (n = 23, 82.1%).

• Immediate postworkshop survey

The training effectiveness was assessed according to the first three levels of the Kirkpatrick evaluation model via a survey.

Level 1: Reaction

The results of the first level of Kirkpatrick evaluation indicated that most of the residents (n 27, 92.9%) expressed contentment with the workshop, i.e., they enjoyed and were satisfied with their expectations from the workshops and their duration. (n = 27, 96.4%). The majority (n = 24, 89%) of the residents reported the activities to be interesting and interactive. A significant number of residents (n = 23,82.1%) considered workshop content relevant to their needs and objectives to be well defined (n = 26, 92.9%).

Level 2: Learning

The results of the second level of Kirkpatrick's evaluation of residents' learning revealed that residents believed in acquiring new knowledge from the workshops (n = 25, 89.3%) and that they intended to advocate for other people to participate in these workshops (n = 26, 92.9%). The residents felt confident in applying what they had learned in the workshops to their respective workplaces (25, 89.3%). Workshops helped them recognize the significance of their leadership roles (n 24, 85.7%), and they felt more equipped to handle work-related demands (n 24, 85.7%) and better prepared to face future challenges as team leaders (n 26, 92.9%).

With respect to different leadership domains, residents (n = 24, 85.7%) felt prepared to maintain a supportive and respectful environment and nurture positive relationships among team members (n = 27, 96.4%). The majority of residents (n = 26, 92.9%) believed that they could better manage team dynamics and motivate individual team members after the workshop. The residents (n = 26, 92.9%) also perceived that they can cultivate a cohesive team environment, maintain a clear focus and implement defined work processes to achieve their shared goals with other team members. Residents (n = 25, 89.3%) gained the sense of empowerment to assume leadership positions within their teams after attending workshops and were enthusiastic to participate in future leadership development activities (n = 26, 92.9%).

• Postworkshop survey after three months:

Level 3: Behavior change

Another survey was conducted after three months to measure the third level of Kirkpatrick's evaluation and assess residents' perceptions of their roles as team leaders. A marked improvement was observed in the behavior of residents as team leaders. The leadership domains that showed significant improvement were the management of team dynamics, maintaining good relationships among team members, fostering a respectful environment, and defining work processes to achieve goals. Notably, a

more significant improvement was observed in the domain of personal leadership, where residents felt more confident and empowered as leaders in their workplace following the workshops. (Fig. 1)

The Friedman test was conducted to determine whether there were significant differences in participants' scores across the three time points (preworkshop, after training, and after three months). There were statistically significant differences among the scores at these time points. (p value of 0.003) (Table 1).

Table 1
Comparison of Pre and post-intervention scores
Test Statistics

N	**28**
Chi-Square	11.615
df	2
Asymp. Sig.	.003
a. Friedman Test	

Table 2
provides insights into the participants' performance at different time points: before the workshop, after training, and three months later. The mean scores notably increased from 72.85% before the workshop to 84.14% after training, with a trend of 83.82% three months post-training. Concurrently, the standard deviations decrease, signifying reduced score variability, reflecting that participants' performance became more consistent after the workshop and remained so in the subsequent months, with the lowest standard deviation observed after three months.

	Mean	**Standard Deviation**
Pre-workshop score percentage	72.85	21.25
After training score percentage	84.14	16.67
After three months score percentage	83.82	12.98

Table 2
Residents' perception about leadership: Pre & post workshop results

	Pre-workshop (T0) (Agree + strongly agree)		**Immediately after the workshop (T1) (Agree + strongly agree)**		**3 months after workshop (T2) (Agree + strongly agree)**	
	n	%	n	%	n	%
I am confident about my leadership skills	17	60.7%	25	89.3%	25	89.3%
I feel empowered to be the leader in my area	17	60.7%	25	89.3%	26	92.9%
I can consider myself a responsible leader	22	78.6%	24	85.7%	27	96.4%
I have maintained a supportive environment for my team	22	78.6%	24	85.7%	27	96.4%
I can manage team dynamics	23	82.1%	26	92.9%	28	100.0%
I motivate my team to deliver their best performance	24	85.7%	26	92.9%	27	96.4%
I maintain good relations among team members and maintain a respectful environment	25	89.3%	27	96.4%	28	100.0%
I ensure that all team members work as a group with a clear focus, and defined work processes to achieve goals	24	85.7%	26	92.9%	28	100.0%
I will participate in future leadership development activities	23	82.1%	26	92.9%	26	92.9%

Discussion

We observed a favourable improvement in residents’ leadership skills when leading on-call teams after their participation in the leadership development workshop. The findings also demonstrated positive shifts in participants' attitudes toward future leadership roles and heightened expectations regarding their leadership behaviors.

The majority of residents who participated in our leadership workshops were satisfied with the workshops, finding the content to be highly relevant, and activities interesting and interactive with well-defined objectives. Our findings were in line with the study conducted by Daniel M Blumenthal et al. The participants in their leadership course for internal medicine residents acknowledged that the curriculum

had effectively delivered the content and imparted skills pertinent to their clinical needs and leadership responsibilities [10].

The residents who participated in our workshop believed that there was a significant improvement in their leadership skills after they attended training workshops and that the beneficial effects remained sustained at 3 months post workshops (p value 0.003). The improvement in the skills and behavior of the participants in our study is consistent with prior studies of leadership training of physicians and residents[[10, 11]]. Recently, published systematic reviews of leadership development programs for medical education trainees reported that, despite the use of different metrics, there was an improvement in the perception and attitude of leadership knowledge and skills, along with widespread satisfaction with the program's quality and content[12, 13]. Although the initial impact seems promising, the long-term effectiveness of residents' leadership development skills and their impact on meaningful, measurable outcomes, such as patient care improvement, the transformation of the healthcare system, and the acquisition of leadership roles in the future, has not been widely studied. There is a need for further research in these areas to understand the long-term impact of leadership training and to develop effective leadership training programs [13, 14].

The personal leadership domain centres on leaders' self-awareness, including their capacity to recognise strengths and weaknesses, set and attain goals, and demonstrate emotional intelligence. A notable improvement was observed in this domain following the implementation of leadership workshops in our study. Most participants agreed that they understood their leadership skills better after the workshop, felt more empowered to lead, and planned to engage in leadership development programmes in the future. This aligns with previous studies where leadership workshops enabled participants to strengthen personal leadership, build confidence, develop patience, and adapt their work styles for improvement, resulting in greater assurance and effectiveness (16). Colonel et al. reported similar findings, with residents recognising the importance of physicians as leaders and feeling more prepared for future challenges after leadership training (17). Importantly, our findings also mirror another study's results, which documented significant improvements in various areas such as self-efficacy, self-awareness, and satisfaction with the work environment among participants of leadership development programmes (18).

This study has several limitations. This study was conducted at a single ACGME-I-accredited private sector hospital, which may limit the generalisability of the findings to other private and public sector institutions, given the variability in residency training structures and resource availability across different settings. Another notable limitation of this study was the lack of resident involvement in the design of the workshop, which may have reduced its ability to address the specific needs and preferences of the target audience. Additionally, the study did not evaluate the impact of leadership training on residents' actual performance or patient care through direct observation or objective measures, nor did it assess its long-term influence on healthcare quality or organizational performance.. Moreover, while leadership development programmes for healthcare residents demonstrate encouraging initial outcomes, there remains a substantial knowledge gap regarding their long-term effectiveness. Further research is needed

to assess whether such training translates into meaningful outcomes, including improvements in patient care, healthcare system transformation, and the attainment of future leadership roles

CONCLUSION

The favorable impact of leadership training on residents' attitudes is encouraging and represents an important step in the development of the postgraduate leadership curriculum. Initial workshop evaluations have yielded encouraging results, showcasing enhancements in participants' attitudes toward future leadership prospects and their expected leadership behaviors. These results highlight the need to include leadership education in the curriculum of postgraduate programs, which may help to produce a new generation of motivated and successful leaders. These future leaders,by fostering collaboration and streamlined processes, can enhance patient satisfaction, minimize medical errors, and eventually achieve outstanding healthcare outcomes.

Abbreviations

IM
Internal medicine
SPSS
Statistical Package for the Social Sciences
SD
standard deviation

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Review Committee of Aga Khan University (No. 83243452). Informed consent was obtained from all individual participants included in the study.

Consent for publication

Informed consent was obtained from all individual participants included in the study

Competing interests

The authors declare no competing interests.

Availability of data and materials

Available on request

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Authors' contributions

IK: conceived and designed the research, performed the data analysis, interpreted the results, initial draft and revised the manuscript critically for intellectual content.

SB: was involved in the research design, results interpretation, and contributed to the writing of the initial draft and revised the manuscript critically for intellectual content

MH: analysed the data, interpret the results , assisted in manuscript drafting and revision

SA: collected the data ,interpreted the results, and revised the manuscript critically for intellectual content.

MT: was involved in the research design, results interpretation, and contributed to the writing of the initial draft and revised the manuscript critically for intellectual content

All authors revised the article and approved the submitted version.

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Figures

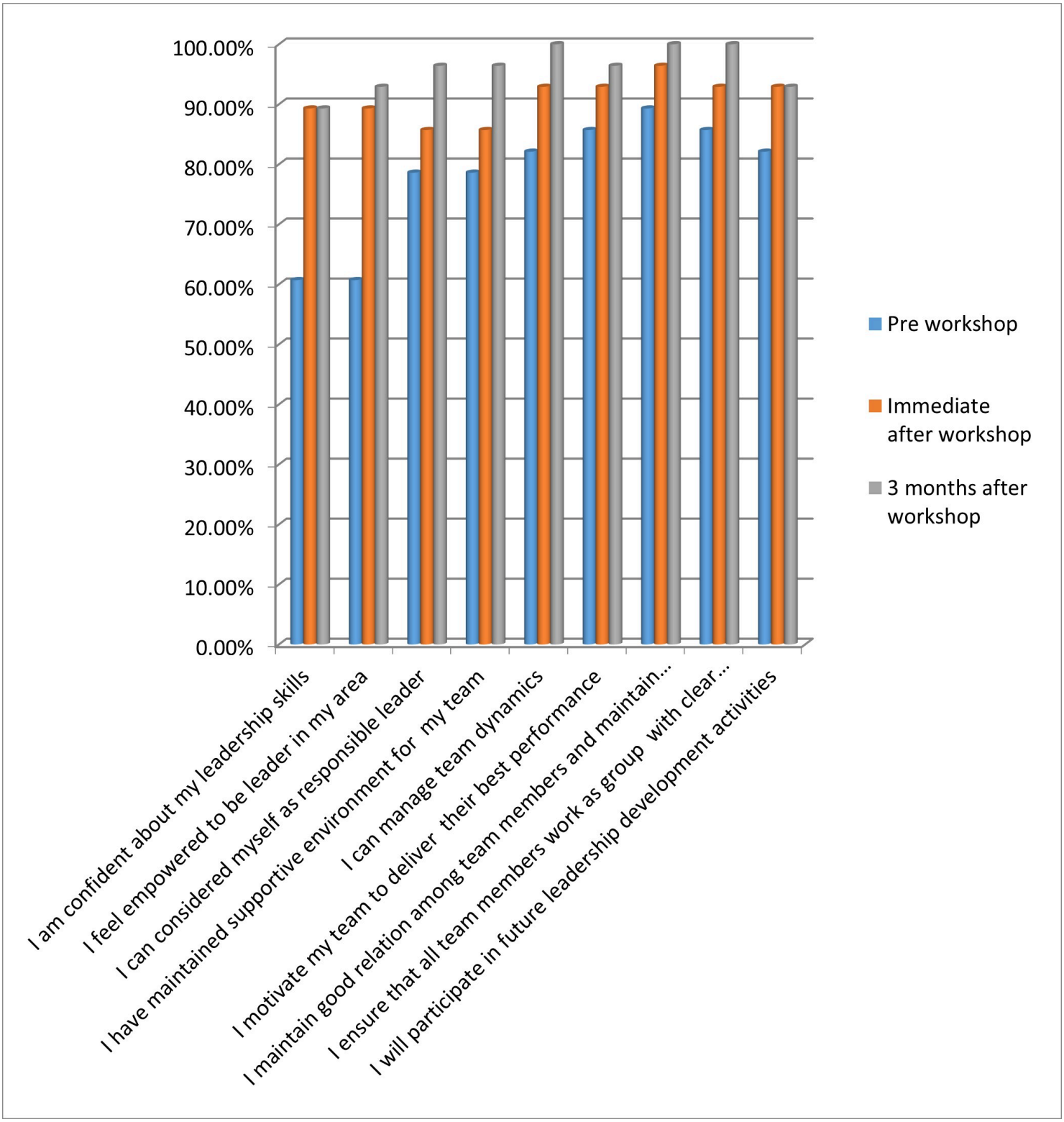

Figure 1

Resident behavior regarding leadership skills: Pre and post-intervention