Research Article

Employment Skills of Public Health Students and Graduates in a Public University: A Study from South India

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A B S T R A C T

Background: Public Health has a demanding job market and the number of institutions offering Master of Public Health programmes (MPH) is on the rise. This paper investigates the perceived employability skills required for public health students and graduates to secure and sustain a job.

Method: A survey was conducted among 41 students and graduates of the MPH programme (12 beginners, 18 mid-termers, and 11 graduates) offered at a public university in South India. Importance-performance analysis (IPA) of employability skills was done using a tool adopted from the Generic Skills Questionnaire from Tuning Educational Structure. Non-parametric tests (Mann-Whitney test, Kruskal Wallis test, and Spearman Rank correlation test) were used to test the hypotheses on the association of achievement of employability skills with various predictors.

Results: The median of overall importance and achievement of skills was three each. The most important employability skills were 'decision-making' and 'planning and time management'. The least important ones were the 'ability to work autonomously' and the 'innovative and entrepreneurial spirit'. The level of achievement was high for the skills, namely 'will to succeed' and 'concern for quality'. It was low for skills – 'capacity for analysis and synthesis', and 'initiative and entrepreneurial spirit'. Job experiences/ internship opportunities were found negatively correlated with the achievement of employability skills, reflecting the limitation of the MPH curriculum (p value: 0.030). Graduates had higher levels of achievement compared to beginners and mid-termers, indicating the contribution of the MPH curriculum in skill development.

Conclusion: It is important to design the MPH curriculum to ensure students' achievement of essential employability skills to enhance their job prospects upon graduation.

Keywords: Employability Skills, Level of Importance, Level of Achievement, Public Health, Students and Graduates, South India

Introduction

Employability, the prospect of being employed, is a crucial concern, not only for potential employees but also for employers. The higher education system across the world is debating over the relationship between earning a degree and employability. The International Labor Organization (ILO) estimated that about 75 million young people are unemployed worldwide (12.6%) and 200 million are living on less than $2 per day.[1] One of the most important reasons for the high rates of unemployment/ underemployment among youth is that they are not equipped with skills that will enable them to acquire a job and continue in that job.[2,3] Such skills are generally termed as employability skills. Employability skills can be defined as the basic skills that are to be possessed by an individual to gain an acceptable level of employment in his/ her domain.[4,5]

Public health is an important part of the healthcare system and is essential in improving and maintaining society's health. The Master of Public Health (MPH) programme integrates principles of medical and social sciences along with statistics, data analytics, and management sciences to find solutions for various public health issues. Currently, several Indian institutions and universities offer the MPH programme. The eligibility criteria for the programme are multidisciplinary. Between the period 1997 and 2017, the number of institutions offering the programme has increased to 44 from two. This shows an increasing demand for public health education in the recent scenario and demands for more considerable investments in the sector to strengthen management with more postgraduate courses in the field. This is evident from the shift of medical college centres to separate schools for public health.[6–9] Sharma and Zodpey write about the need to address the large shortfall of public health professionals in India with adequately and appropriately designed real-world-oriented public health learning.[7]

Studies with a specific focus on the employability skills of public health graduates were limited in the literature globally. Buunaaisie et al. published a study in 2018 that explored the career experiences of international MSc Public Health graduates in England. The study found that the graduates had enhanced career goals in diverse areas such as policy analysis, leadership roles, planning, management and evaluation of public health interventions, and research. The perceived employability skills relevant to their present job were critical analysis, multidisciplinary thinking, demonstrating public health leadership skills and research.[10] The most sought-after skill in the healthcare industry was communication, followed by information, communication, and technology (ICT), work

psychology, teamwork, interpersonal skills, critical thinking, and problem-solving skills.[11]

Evidence suggests that the employability skills of MPH graduates vary with their basic qualifications.[9] The public health challenges of India are diverse and complex, with the demographic and epidemiologic transition burdened by the emerging and reemerging communicable diseases, non-communicable diseases, maternal and child health issues, huge out-of-pocket expenditure, and widening health inequalities in the post-pandemic period. Given this scenario, it is high time to invest in producing highly skilled public health graduates who are well-equipped to manage these challenges.[12,13] The foremost action to be taken for the same is to identify the required skill set for public health professionals/ graduates. However, no studies discussing the employability skills of public health graduates were identified during our literature review, especially in the Indian context. With a growing priority towards public health in general and public health education (i.e., MPH) in particular, understanding the employability skills of public health graduates is a matter of crucial importance. In this regard, we aim to assess the employability of MPH graduates in an Indian Public University. This study is focused on addressing the following objectives:

- To assess the perceived employability skills of students (beginners, mid-termers, graduates) enrolled in the Master of Public Health Programme at a South Indian University
- To understand the factors contributing to the employability skills of students enrolled in the Master of Public Health programme at a South Indian University

Methodology

We conducted a cross-sectional survey among students and graduates of the MPH programme at a Public University in South India. The research population included individuals who enrolled in the MPH programme at the selected Public University since 2016. There were 81 participants at various levels of study (beginners, mid-termers and graduates) as of 2019. All of them were approached for the study. However, only 41 participants responded. The data was collected from September 2019 to January 2020.

A structured questionnaire was used to capture information across six categories: 1) demographic details, 2) family profile, 3) work experience, 4) academic performance, 5) perceived rating of the curriculum, and 6) a Likert scale to measure the importance and level of achievement of various employability skills. The tool to assess employability skills was adopted from the Generic Skills Questionnaire from Tuning Educational Structure with permission.[14] The tool

consists of 30 competencies and skills under three domains: instrument competencies, interpersonal competencies, and systemic competencies. The level of achievement and level of importance will be assessed on a four-point Likert scale. Based on the participants' ratings, the skills were categorised into four types:

- Concentration – important skills, but in which there was little achievement
- Maintenance – important skills, and achievement was also high
- Low priority – not very important skills and achievement was low
- Excess effort - not very important skills, but achievement was high

The content validity and face validity of the tool were assessed. The internal consistency of the tool was measured using Cronbach's alpha (α). The computed value of α was obtained as α = 0.856, which reflects that the adapted version of the tool had an acceptable level of internal consistency. The quantitative survey was conducted directly using Google Forms. Informed consent was taken prior to the survey.

The data collected were extracted into Microsoft Excel data sheets. It was cleaned for missing data/ inconsistencies, after which it was exported to IBM SPSS v 27.0 for analysis. Continuous variables like age were expressed as mean, median, standard deviation and mode. Categorical variables were expressed in frequencies and proportions. Non-parametric tests were used for hypothesis testing after checking the distribution of data. The data was not normally distributed and the skewness was -0.419. Non-parametric tests such as the Mann-Whitney test, the Kruskal Wallis test, and the Spearman Rank correlation test were used to test the hypotheses on the association of achievement of employability skills with various predictors, given that the sample size is small. Mann-Whitney test is analogous to the independent samples t-test and Kruskal Wallis test to one-way ANOVA. The median is the central tendency measure used in these tests rather than the mean as in parametric tests. Spearman's rank correlation measures the strength and direction of association between two ranked variables. Some variables were recategorised appropriately to ensure a minimum sample size in individual groups.

The study was conducted with the approval of the Institutional Human Ethics Committee of the Central University of Kerala. All the participants were provided with participant information sheets. Additionally, the study was explained to them by a trained data collector. Participation in the study was purely voluntary. Informed consent was obtained from all the participants prior to data collection. The privacy and confidentiality of the participants were maintained at all phases of the study.

Results

The sociodemographic characteristics of the participants are presented in Table 1. The mean age of the respondents was 26.5 years, with a standard deviation of 2.6 years. The minimum reported age was 23.0 years, and the maximum was 34.0 years. The majority were females and hailed from rural areas. Three-fourths of them were not married.

Table 1.Sociodemographic Characteristics of the Participants

N = 41

Variable		Frequency (n)	Percentage (%)
Native place	Kerala	28	68.3
	Non-Kerala	13	31.7
Location	Rural	27	66.0
	Urban	14	34.0
Age (in years)	< 27	25	61.0
	≥ 27	16	39.0
Sex	Male	13	31.7
	Female	28	68.3
Marital status	Unmarried	31	75.6
	Married	10	24.4
Religion	Hindu	24	58.5
	Christian	11	26.8
	Muslim	5	12.2
Caste (N = 40)	General	16	40.0
	OBC	17	42.5
	SC/ ST/ others	7	17.5
Head of the family	Self	2	4.9
	Parents	37	90.2
	Others	2	4.9
Education of the head of the family	Professional/ degree and above	26	63.4
	Up to higher secondary	15	36.6
Occupation of the head of the family	Senior level/ professional/ managerial job	23	56.1
	Skilled work	11	26.8
	Unskilled work/ elementary occupation/ unemployed	7	17.1

Monthly household income (INR)	≥ 26,355	30	73.2
	< 26,355	11	26.8
Stage of enrolment into MPH programme	Beginners	12	29.3
	Mid-termers	18	43.9
	Graduates	11	26.8

Current Employment Status of the Participants

Eight participants (19.5%) in the study were currently employed. Among them, five were working in the private sector and three in the public sector. Seven were working in research fields, and one was in a health programme. The annual income ranged from INR 276,000 to INR 626,400 with a mean and standard deviation of INR 411,550.0 and INR 127,875.9, respectively. Out of eight employed participants, only two said they were extremely satisfied with the job, and five were very satisfied.

Rating of the MPH Programme

The participants rated the programme based on ten attributes, on a Likert scale. The results are given in Table 2.

Ease of learning and understanding the curriculum, job experiences/ internship opportunities outside the university, and the scope of public health with respect to the job opportunities were three attributes rated high by more participants. Practical experience relevant to the job and exposure to contemporary developments in the field were the most low-rated attributes. The median and mode of rating the MPH programme on a five-point scale (excellent, very good, fair, poor and very poor) were three and four, respectively.

Table 2. Rating of Master of Public Health Programme at CUK

Attributes	Rating, n (%)				
	Excellent	**Good**	**Fair**	**Poor**	**Very Poor**
Reputation of the institution	8 (19.5)	15 (36.6)	10 (24.4)	4 (9.8)	4 (9.8)
Teaching learning activities	4 (9.8)	14 (34.1)	14 (34.1)	6 (14.6)	3 (7.3)
Practical experience relevant to the job	0 (0.0)	12 (29.3)	13 (31.7)	14 (34.1)	2 (4.9)
Exposure to contemporary developments in the field	1 (2.4)	15 (36.6)	13 (31.7)	8 (19.5)	4 (9.8)
Relevance of course content to the job market	2 (4.9)	14 (34.1)	15 (36.6)	7 (17.1)	3 (7.3)
Ease of learning and understanding the curriculum	3 (7.3)	19 (46.3)	10 (24.4)	6 (14.6)	3 (7.3)
Scope provided for learning additional skills*	3 (7.3)	14 (34.1)	14 (34.1)	7 (17.1)	3 (7.3)
Job experiences internship opportunities outside the university	2 (4.9)	17 (41.5)	13 (31.7)	7 (17.1)	2 (4.9)
The scope of public health with respect to job opportunities	3 (7.3)	16 (39.0)	12 (29.3)	8 (19.5)	2 (4.9)
Ease of getting a job after completing the programme	1 (2.4)	13 (31.7)	17 (41.5)	9 (22.0)	1 (2.4)

*MOOC, conferences and workshops

Importance-Performance Analysis (IPA) of Employability Skills

The importance-performance analysis was done for 30 skills as per the tool by Qomariyah et al.[14] Figure 1 and Table 3 show the results of IPA. It is evident from the figure that the participants rated each of the 30 skills above three (on a scale of four) in terms of both importance and level of achievement.

Perceived Importance of Employability Skills

The study participants rated the importance of employability skills on a four-point- Likert scale (not important, less important, moderately important and very important). The most important five employability skills, as perceived by the study participants, were decision-making, planning and time management, problem-solving, teamwork and capacity for applying knowledge in practice. The least important ones were the ability to work autonomously, the innovative and entrepreneurial spirit, and the understanding of the cultures and customs of other countries. The median and mode of the overall importance of employability skills were three and four, respectively.

Achievement of Employability Skills in the Field of Public Health

The perceived level of achievement (LoA) of thirty skills identified to be relevant to public health discipline was assessed based on a four-point Likert scale (strong, considerable, weak and none). The level of achievement was found high for the skills, namely 'will to succeed and concern for quality'. It was found that skills such as capacity for analysis and synthesis, initiative, and entrepreneurial spirit were low. The median of overall achievement of skills was three with a mode of four.
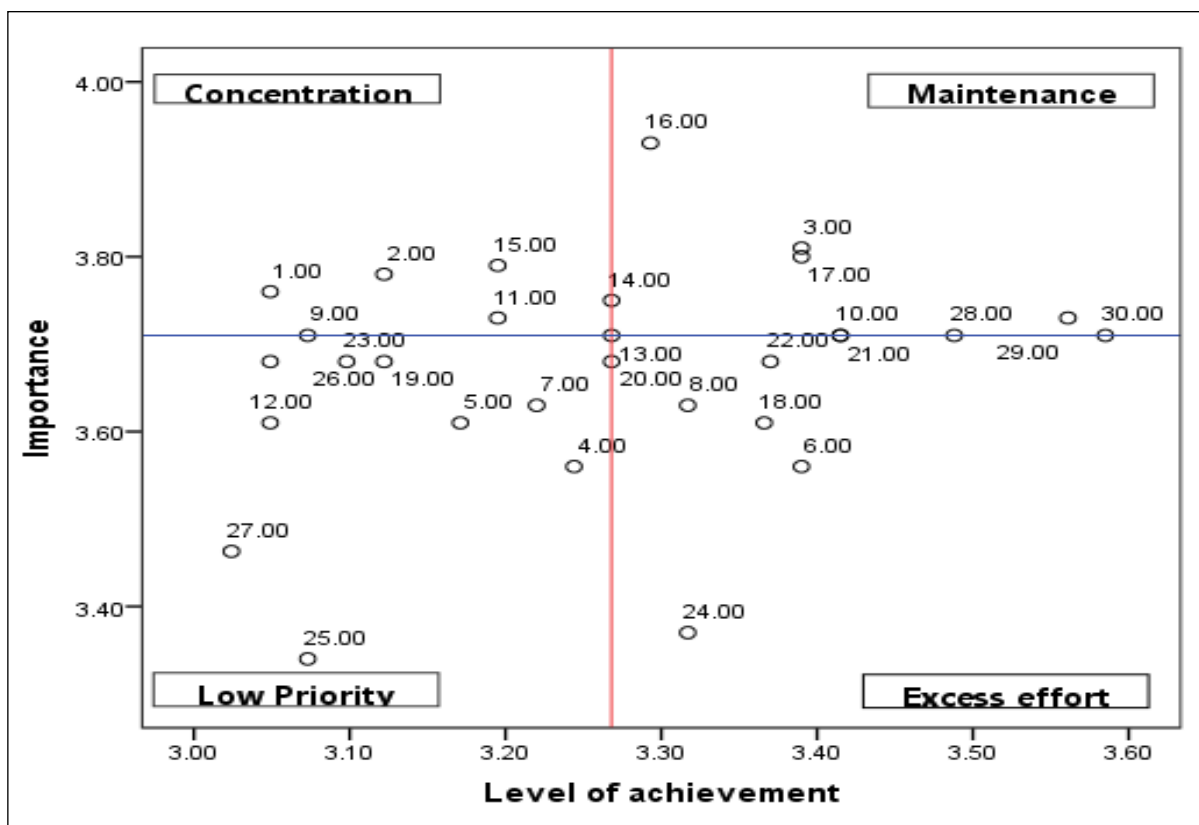

Figure 1.Important-Performance Analysis

Table 3.Perceived Importance and Level of Achievement of Employability Skills

Concentration	Maintenance
Capacity for analysis and synthesis	Planning and time management
Capacity for applying knowledge in practice	Capacity to learn
Research skills	Capacity for generating new ideas (creativity)
Information management skills (ability to retrieve and analyse information from different sources)	Decision making

Problem-solving	Teamwork
	Ability to communicate with non-experts (in the field)
	Ethical commitment
	Concern for quality
	Will to succeed

Low priority	**Excess effort**
Basic general knowledge in the field of public health	Oral and written communication in your native language
Grounding in basic knowledge of the profession in practice	Elementary computing skills
Knowledge of a second language	Capacity to adapt to new situations
Critical and self-critical abilities	Interpersonal skills
Leadership	Ability to work in an interdisciplinary team
Ability to work in an international context	Appreciation of diversity and multiculturalism
Ability to work autonomously	Understanding of cultures and customs of other countries
Project design and management	
Initiative and entrepreneurial spirit	

Factors Affecting the Achievement of Employability Skills

Sociodemographic and Economic Factors and the Level of Achievement of Employability Skills

Table 4 depicts the results of the bivariate analysis. The mean rank score of level of achievement of employability skills was found to be four points higher for older participants, compared to the younger ones. However, it did not vary widely between male and female participants. Being married is found to improve the mean rank score of LOA of employability skills by six points. Similarly, participants from high-income households showed a better LoA of employability skills than those from low-income households. None of the factors showed a statistically significant association with the level of achievement of employability skills.

Table 4. Sociodemographic and Economic Factors and the Level of Achievement of Employability Skills

Category		Mean Rank	Statistic	p Value
Native place	Kerala (28)	21.78	160.000*	0.488
	Non-Kerala (13)	19.31		
Location	Rural (27)	22.26	155.000*	0.293
	Urban (14)	18.57		
Age (years)	< 27 (25)	19.16	154.000*	0.227
	≥ 27 (16)	23.88		
Sex	Male (13)	20.77	179.000*	0.925
	Female (28)	21.11		
Religion	Hindu (24)	20.23	0.140**	0.932
	Christian (11)	21.45		
	Muslims (5)	19.70		
Caste	General (16)	20.31	0.015**	0.992
	OBC (17)	20.74		
	SC/ ST/ others (7)	20.36		

Marital status	Unmarried (31)	19.55	110.000*	0.125
	Married (10)	25.50		
Head of the family	Self (2)	35.00	4.133**	0.127
	Parents (37)	20.00		
	Others (2)	25.50		
Education of head of family	Professional/ degree and above (26)	22.77	149.000*	0.162
	Up to higher secondary (15)	17.93		
Occupation of the head of the family	Senior level/ professional/ managerial job (23)	21.48	0.989**	0.610
	Skilled works (11)	22.27		
	Unskilled work/ elementary occupation/ unemployed (7)	17.43		
Monthly household income (INR)	≥ 26,355	22.20	120.00*	0.137
	< 26,355	16.91		

*Mann Whitney U test (U statistic); **Kruskal Wallis test (Chi-square statistic)

Personal Circumstances and Level of Achievement (LoA) of Employability Skills

A Mann-Whitney test showed a statistically significant association of participants' chronic illness history with their LoA of employability skills (U statistic = 15.000, p value = 0.018), with a higher mean rank score of 35.00 for those reported chronic illness and 19.89 for those who did not report any illness. The responsibility of the household chores and family members was considered. The mean rank score of LoA of employability skills did not show a statistically significant difference between participants who had to take care of the household chores/ members and those who did not have to (Mean rank score = 23.60 vs 20.64, U statistic = 77.00, p value = 0.629).

Working Experience of the Participants and LoA

Participants who were currently employed after completing the MPH programme had a higher mean rank of LoA of employability skills (27.00), compared to those who were not currently employed (19.55). This finding showed a statistical significance at 90.0% confidence limits (U statistic = 84.000, p value = 0.076).

The mean rank score of LoA of employability skills did not show a significant difference between those with and without working experience before joining the MPH programme (mean rank score = 20.52 vs 22.17, U statistic = 160.000, p value = 0.652).

Master of Public Health Programme and the Level of Achievement of Employability Skills

A Kruskal Wallis test showed a statistically significant difference in the mean rank score of LoA of employability skills based on the stage of enrolment in the MPH programme. The mean rank score was more or less the same for beginners (18.00) and mid-termers (19.06). Whereas the same for graduates was very high (27.45). The findings were significant at 90.0 per cent confidence limits (Chi-square statistic = 5.584, p value = 0.061).

The Spearman's Rank correlation test is used to understand the correlation between the MPH rating by the participants and their level of achievement of employability skills. The rating of individual items and the overall rating of MPH were tested with the level of achievement of employability skills, and the results are given in Table 5. It is evident from the table that the level of achievement of employability skills did not show a strong negative or positive correlation with any of the individual MPH rating items or overall rating. However, a weak statistically significant negative correlation was observed with job experiences or internship opportunities outside the university. Further, the relevance of course content to the job market also showed a weak negative correlation at 90.0% confidence limits.

Table 5. Rating of MPH Programme and the Level of Achievement of Employability Skills

Items	LoA of Employability Skills Spearman's rho	p Value
Reputation of the institution	-0.019	0.904
Teaching learning activities	-0.092	0.569
Practical experience relevant to the job	0.031	0.846

Exposure to contemporary developments in the field	-0.089	0.581
Relevance of course content to the job market	-0.276	0.081
Ease of learning and understanding the curriculum	-0.029	0.859
Scope provided for learning additional skills	-0.059	0.712
Job experiences/ internship opportunities outside the university	-0.339	0.030
The scope of public health with respect to job opportunities	-0.140	0.383
Ease of getting a job after completing the programme	-0.084	0.603
Overall MPH rating	-0.167	0.297

Discussion

The first objective of the study was to assess the perceived employability skills of students (beginners, mid-termers, graduates) enrolled in the Master of Public Health programme at a public university in Kerala. The graduated participants had a relatively higher level of achievement of employability skills in the study, whereas beginners and midterms scored low. This indicates that the MPH programme is contributing to the employability skills of students. A conclusive remark is possible only after excluding the influence of potential confounders and effect modifiers; however, the small sample size limits its scope. Studies that compare employability skills at different stages of graduate programmes are limited in the literature. This also affects the reliability of the finding. Hence, it calls for further exploration from multiple settings with sufficient sample size.

The perceived importance of all 30 employability skills was high among study participants, similar to the study of Qomariyah et al., who used the same tool among public health students in Indonesia.[14] However, a difference was observed in the ranking of importance. The most important three employability skills, as perceived by participants in the present study, were decision-making, planning and time management, and problem-solving. The least important ones were the ability to work autonomously, understanding the cultures and customs of other countries and initiative and entrepreneurial spirit. The most important three skills in the study by Qomariyah et al. were the will to succeed, the ability to communicate with non-experts in the field and elementary computing skills and the least important ones were knowledge of a second language, the ability to work in an international context, and understanding of cultures and customs of other countries. This difference could be reflecting the perceptions of participants regarding the job market situations in the respective study settings. Communication skills are one of the most sought-after skills in health service management, as reported by many studies.[11,15,16] These studies also emphasised teamwork, problem-solving and interpersonal skills as important skills.

Another study among public health graduates emphasized critical thinking, problem-solving and research skills, similar to the present study.[10] Sharma and Zodpey identified interdisciplinary learning as important for public health professionals to understand the social determinants of health.[7]

The perceived level of achievement of employability skills was also high in the present study, irrespective of the stage of the MPH programme. Each skill had a score of three and above, indicating a considerable to strong level of achievement. However, in the study done by Qomariyah et al., about nine skills had a score below three, indicating weak to considerable achievement. The lowest score of achievement was obtained for the same skills perceived as less important. In the present study, the lowest achievement was observed for capacity for analysis and synthesis, critical and self-critical abilities, and initiative and entrepreneurial spirit. The skills with the highest achievement in the present study were will to succeed, concern for quality and ethical commitment, whereas the same in the study of Qomariyah et al. were teamwork, basic general knowledge in the field of public health, and appreciation of diversity and multiculturalism.[10]

The results of the importance-performance analysis in the Indonesian study varied from that of the present study. The common skills coming under the category of maintenance (very important and high level of achievement) in both studies were decision-making, teamwork, ability to communicate with non-experts in the field, concern for quality and will to succeed. The only common skill under concentration (very important, low level of achievement) was problem-solving. The common skills under low priority (not very important, but the level of achievement high) were grounding in basic knowledge of the profession in practice; knowledge of a second language; critical and self-critical abilities; ability to work in an international context; project design and management; initiative and entrepreneurial spirit. The common skill under excess effort was the appreciation of diversity and multiculturalism.[14]

Studies that explored factors affecting the achievement of employability skills in public health were limited in the literature. Hence, the results are substantiated by similar studies in health and other sectors.

Though none of the socio-demographic factors showed a significant association, variability in the level of achievement of employability skills was observed with some factors. Unlike the findings of the previous studies[17,18] that the students/ graduates from rural areas perform poorer in terms of employability skills, the present study found higher achievement for those from rural areas. This might be reflective of the greater number of participants from the state of Kerala, where the rural-urban demarcation is marginal.[19]

Participants aged more than or equal to 27 years, those who were married, and those who were the head of the household were found to have higher LoA of employability skills. The previous studies found that older age groups are disadvantaged in terms of attainment of employability skills.[20] The contrasting finding in this study could be the fact that there is no age restriction for admission to the Master of Public Health programme, and hence, it is more likely that those with previous working experience would join the programme. This is asserted by another finding of the study that participants with previous working experience had higher levels of achievement of employability skills. Candidates who were head of their household also had a higher level of achievement of employability skills. However, the finding is not conclusive as there were only two such participants. The LoA of employability skills was found higher for participants from high-income households and if the head of the household was employed in professional or managerial jobs. Both factors indicate the higher economic status of the participants. Previous studies from other sectors also confirm that employability skills are higher among those from better economic backgrounds.[20–22]

Among the personal circumstances considered, those with chronic illness were found to have significantly higher LoA of skills than those who did not have any illness. This might be due to the higher intellectual abilities except for the disease. No other factors considered in this category were found associated with LoA of skills.

The performance of students and graduates at their school was not found to have a significant impact on achieving employability skills required for public health. This could be explained by the skills that the participants perceived to be more important to acquiring a job in the public health sector. They were analytical and problem-solving skills, which are less likely to be inculcated by the schooling system followed in India.

The overall rating of the MPH curriculum was not found to have a significant influence on LoA of employability skills.

Among the individual factors considered, the internship or job experience opportunity was found negatively correlated with the LoA of employability skills. Contradicting this finding, higher LoA of achievement of skills was observed among graduates who were currently employed after completing the MPH programme. This clearly points out that the MPH programme contributes to the employability skills of the students; however, it needs further enriching of the curriculum with sufficient practical end simulation experiences to develop the skills required by employers.

The study contributes to the literature by identifying the essential skills that ensure the employability of MPH graduates. However, the study is based on an MPH programme offered by one institution and the sample size was also small. Moreover, there is no uniformity in the MPH curriculum followed across the country. All these limit the generalizability of the study. Given that the MPH curriculum followed by different institutions and the prospective job market varies widely, a larger study comprising students and graduates across the country would give more insights.

Conclusion

The study proves that MPH graduates have higher LoA of employability skills. The essential skills that ensure employability in public health are problem-solving skills, managerial skills and research skills. The study shows that the MPH curriculum contributes to employability skills. However, it is not up to the mark as perceived by students and graduates. According to them, the curriculum has to be revised to impart more field exposure, laboratory experiences and collaboration with industries. This study has implications on a larger scale given the increasing demand for public health practitioners in the post-covid world. The findings can be utilized to design and implement innovative employment-focused public health curricula across the country.

Conflict of Interest: None

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