ORIGINAL RESEARCH

Factors Affecting Knowledge and Attitude Towards Hybrid Problem-Based Learning Curriculum Among Academicians of the University of Gondar, Northwest Ethiopia

Kindu Yinges Wondie [1], Zerfu Mulaw Endale[1], Ahmednur Hassen Abrahim[2], Alemayehu Abayneh Asefa[2], Andnet Asmamaw Alamneh[2], Bertukan Kefale Berihun[2], Betelhem Kokebie Adamu[2], Bewket Aragie Selamsew[2], Azmeraw Ambachew Kebede [1], Nuhamin Tesfa Tsega [3]

[1]Department of Clinical Midwifery, School of Midwifery, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia; [2]Department of General Midwifery, School of Midwifery, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia; [3]Department of Women's and Family Health, School of Midwifery, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia

Correspondence: Kindu Yinges Wondie, Email kinduyinges2010@gmail.com

Background: Adapting a tutor role in a hybrid problem-based learning (h-PBL) model is a challenge to novices. Therefore, this study aimed to assess the factors associated with the academicians' knowledge and attitude toward the h-PBL curriculum.

Methods: An institution-based cross-sectional study was conducted from August 1st to 30th, 2021. A Simple random sampling was employed. Data were entered and analyzed with EpiData 4.6 and SPSS® version 25. Multivariable logistic regression analysis was fitted and adjusted odds ratio at a p-value of ≤0.05 and 95% confidence interval were used to declare significant association.

Results: The study included 415 academicians with a response rate of 97.8%. Four-sixths (66.3%) of them have good knowledge (95% CI = 61.7–70.8). Being age 30–34 (AOR = 2.97; 95% = CI: 1.69–5.23), being age over 34 (AOR = 3.36; 95% CI = 1.6–6.66), currently teaching (AOR=1.84; 95 CI = 1.1–3.07) and having received PBL training (AOR = 1.9; 95% CI = 1.01–2.7) were significantly associated with good knowledge. More than half (51.1%) had a favorable attitude (95% CI = 46.3–55.9). Being age over 34 (AOR = 3.69; 95% CI: 1.98–6.89), having 5–9 (AOR = 2.21; 95% CI: 1.85–2.34) and above 9 years of experience (AOR = 1.53; 95% CI = 1.03–2.11), having received PBL training (AOR = 1.93; 95% CI = 1.17–2.8), ever-constructing PBL cases (AOR = 1.7; 95% CI = 1.08–2.68), and presence of rooms set aside for PBL sessions (AOR = 2.26; 95% CI = 1.2–4.16) were significantly associated with academicians' favorable attitude.

Conclusion: Academicians' knowledge and attitude towards the h-PBL curriculum can be improved with training, participation in PBL case construction, and setting rooms aside for PBL sessions.

Keywords: academicians, knowledge, attitude, hybrid problem-based learning, University of Gondar

Background

The hybrid problem-based learning (h-PBL) curriculum is a model that combines problem-based learning (PBL) with classical teaching which is comparable to a pure problem-based learning curriculum[1–3] and can be equally implemented in different[4] and even resource-constrained settings.[5] It uses realistic, ill-defined, and open-ended scenarios as problems to develop competence pertaining to medical professionalism.[2,6,7] In h-PBL, the students and lecturers are responsible in the process[8] wherein lecturers act as "facilitators" of learning called tutors.[7] Tutors promote learning and ensure students' reasoning is aligned with their instructional objectives.[7,9,10] Amongst the most important inputs for effectively implementing the PBL curriculum is tutor learning support.[11] Quite importantly, in the hybrid problem-based learning model, the influence of tutors' attributes is apparent.[12]

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For novices, becoming a PBL tutor is a significant change in role.[13] The majority of such tutors will revert to the lecture method,[14,15] and their roles remain unclear[16] unless they are adequately introduced to the substantially different h-PBL curriculum.[14,15] Moreover, some faculty members may even be confused about their role as a PBL facilitator[5,17] whilst others see that as a downgrading from their status as renowned academics to minor learning facilitators.[5] Notwithstanding, medical schools that implement the h-PBL typically train the faculty on its process than the PBL's core philosophy.[18] However, to properly perform their role, tutors should be equipped with the best knowledge[19] and attitude toward the h-PBL.[11]

As per the existing literature, academicians have a positive view about h-PBL.[7,17,20–22] According to a cross-sectional survey from a Kenyon Institution, 38% of lecturers had good knowledge and 48.6% had a favorable attitude toward h-PBL.[17] From another study conducted in Nigeria, 80% of lecturers supported the h-PBL approach.[20] Furthermore, a descriptive study in Saudi Arabia indicated that 76.5% of academicians had good knowledge and 66% had a favorable attitude toward the h-PBL curriculum.[22]

Many medical schools in Ethiopia are adopting the hybrid innovative curriculum (h-PBL), which has been in practice at the University of Gondar College of Medicine and Health Sciences (GCMHS) since 2021. Almost all of the academicians in the University have backgrounds and teaching experience in conventional medical curriculum, they will be recruited as tutors of PBL sessions anyway. Academicians at the college were only briefed on the h-PBL for five days after it has been introduced. However, such self-nominated short-term orientations have not been successful[17] and may not even be sufficient to help tutors' transition to h-PBL.[23] Additionally, about 31.5% of health science students in Ethiopia rated their tutors as competent facilitators of PBL sessions, according to a local study.[24] In Ethiopia, data on academicians' knowledge and attitudes regarding the h-PBL curriculum is limited. Hence, this study was aimed to assess the factors that affect the academicians' knowledge and attitudes about the h-PBL at the University of Gondar College of Medicine and Health Sciences.

Methods
Study Design, Area, and Period
A facility-based cross-sectional study was conducted at the University of Gondar College of Medicine and Health Sciences from August 1st to 30th, 2021. The University of Gondar is a pioneering medical college in Ethiopia, established in Gondar city in 1954 which is 747 km from the capital, Addis Ababa.

The Gondar College of Medicine and Health Sciences has one comprehensive specialized and teaching hospital, which is one of Ethiopia's largest comprehensive specialized hospitals, serving as a training center. The college is implementing the h-PBL in four (Midwifery, Medicine, Nursing and Anesthesia) of its 12 health graduate programs. By the year 2021, the college has 1083 registered academicians, of which 196 are females. All of the academicians in the college are content expert tutors, and almost all of them have some sort of clinical experience in their profession.

Study Population and Eligibility Criteria
The study included all registered academicians in the college present at the time of data collection period irrespective of their experience and/or academic rank.

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The single population formula was used to calculate the sample size for the current study by considering the following assumptions: the proportion of knowledge and attitude – 50%, level of confidence – 95%, and margin of error – 5%.

Therefore, the sample size (n) $= \frac{(Z\alpha/2)^{2*}p(1-p)}{d^2}$ $= \frac{(1.96)^{2*}0.5(1-0.5)}{(0.05)2}$ = 384. By adding a non-response rate of 10%, the final sample size was 424. Simple random sampling was employed after obtaining the list of academicians from the college's human resource management office and using it as a sampling frame. The study participants were selected by using computer generated random numbers.

Variables of the Study

Academicians' knowledge of and attitude toward the h-PBL were the outcome variables, whereas, age, marital status, department, academic rank, total teaching experience, monthly income, training on PBL, ever taking a course with PBL, tutoring experience in PBL, participation in PBL case preparation, presence of PBL coordinating committee, and availability of rooms set aside for PBL sessions were independent variables.

Measurements

Knowledge was assessed by 24 items. Knowledge about the concept of PBL was assessed using 19 questions asking about its definition, learning objectives, problem solving, teamwork, delivery of integrated knowledge, and active learning. Knowledge on the learning assessment was measured in five items. The response for each item was then entered as follows: "yes" = 1, and "no" = 0. The mean knowledge score was calculated, and the composite variable "knowledge" was dichotomized as "poor knowledge" and "good knowledge".

Good Knowledge of the h-PBL

Respondents who scored equal to or higher than the mean score (66) on the 24 knowledge assessment questions were regarded to have good knowledge about the h-PBL.

Poor Knowledge of the h-PBL

Respondents who scored below the mean score (66) on the 24 knowledge assessment questions were regarded to have poor knowledge about the h-PBL.

16 items on a 5-point likert scale were used to measure attitude, with "Strongly disagree" = 1 "Disagree" = 2, "Neutral" = 3 "Agree" = 4, and "Strongly agree" = 5. Attitude was dichotomized as either "favorable" or "unfavorable".[22]

Good Attitude

Participants in this study were regarded to have a favorable attitude toward the h-PBL if they scored equal to or higher than the mean score (51) on 16 attitude assessment items.

Poor Attitude

Participants in this study were regarded to have an unfavorable attitude toward h-PBL if they scored below the mean score (51) on 16 attitude assessment items.

Data Collection Tool and Quality Assurance

After a review of literature, the data collection tool was developed.[3,7,12,21,22,25–27] A structured self-administered questionnaire was used to collect the data. The questionnaire comprised socio-demographic characteristics, knowledge and attitude assessment questions, and facility and professional development-related items. The questionnaire was reviewed by one PBL expert, and one pedagogy expert was to ensure face validity. The data was collected and supervised by five BSc and two MSc midwives, respectively. The questionnaire was prepared in English and administered to a 5% of the calculated sample size at Debre Tabor University. After the pretest, the tool's language clarity was checked, any necessary changes were made which included writing clearer instructions, editing some items and removing items that were not aligned with the objectives of the study. The inter-item consistency of the tool was estimated with a Cronbach's coefficient alpha test, which yielded 0.87 and 0.82 for knowledge and attitude, respectively. A two-day training on the overall data collection procedure was given. The supervisors checked the questionnaire's completeness on a daily basis.

Data Processing and Analysis

Before being exported to SPSS® version 25 for cleaning and analysis, the data was checked, coded, and entered into EpiData version 4.6. The characteristics of the participants were presented in frequency, mean, and proportion/percentage. In the multivariable logistic regression analysis, variables with a p-value of less than 0.25 in the bivariable logistic regression analysis were included, and the AOR (adjusted odds ratio) at a p-value of ≤0.05 with 95% CI (Confidence

Interval) was used to declare a significant association. With a variance inflation factor of <10, the multicollinearity assumptions were checked, and the Hosmer–Lemeshow goodness-of-fit test was used to check the model fitness.

Results

Socio-Demographic Characteristics of the Academicians

The survey was completed by 415 participants, for a response rate of 97.8%. The academicians' mean age was 32.3 ± 4.2 years and the great majority of them (72.8%) were males. In terms of marital status, 64.6% were married and more than half (52.8%) were lecturers by academic rank (Table 1).

Factors Affecting Academicians' Knowledge of the h-PBL Curriculum

The overall knowledge about the h-PBL curriculum among academicians was found to be 66.3% (95% CI = 61.7–70.8).

A multivariable logistic regression analysis was used to identify factors that were significantly associated with academicians' knowledge about the h-PBL curriculum. Thus, being in the 30–34 age range, being above 34 years, currently teaching, and having taken PBL training were found to be significantly associated with academicians' good knowledge of the h-PBL curriculum. Academicians aged 30 to 34 years had three times the odds of having a good knowledge of the h-PBL curriculum as compared to those younger than 30 (AOR = 2.97; 95% = CI: 1.69–5.23). Academicians over the age of 34 were more than three times to know about the h-PBL curriculum (AOR = 3.36; 95% CI = 1.6–6.66). Academicians aged 30 to 34 years had three times the odds of having a good knowledge of the h-PBL curriculum as compared to those younger than 30 (AOR = 2.97; 95% = CI: 1.69–5.23). Similarly, academicians older than 34 years were more than three times more likely to know about the h-PBL curriculum (AOR = 3.36; 95% CI = 1.6–6.66). Academicians' current teaching status has nearly doubled their odds of knowledge about the h-PBL curriculum (AOR = 1.84; 95% CI = 1.1–3.07) compared to those who were not teaching at the time of data collection.

When compared to their counterparts, academicians who had received training about the h-PBL curriculum had nearly twice the odds of having a good knowledge of it (AOR = 1.9; 95% CI = 1.01–2.7) (Table 2).

Factors Affecting Academicians' Attitude Towards the h-PBL Curriculum

More than half (51.1%) of the academicians had a favorable attitude toward the hh-PBL(95% CI = 46.3–55.9).

In the multivariable logistic regression analysis, academicians' favorable attitude toward the h-PBL curriculum was significantly associated with being older than 34 years, having more than four years of teaching experience, having PBL training, participating in the PBL case scenario construction, and having rooms set aside for PBL sessions in the department.

Academicians over the age of 34 were four times more likely than those younger than 30 to favor the h-PBL curriculum (AOR = 3.69; 95% CI: 1.98–6.89). Similarly, academicians with five to nine years of teaching experience had two (AOR = 2.21; 95% CI: 1.85–2.34) and 1.5 (AOR = 1.53; 95% CI = 1.03–2.11) times higher odds of having a favorable attitude toward the h-PBL curriculum than academicians with less than five years of teaching experience. Academicians who received PBL training had nearly twice the odds of having a favorable attitude (AOR = 1.93; 95% CI = 1.17–2.8) than those who did not. Likewise, when compared to their counterparts, those academicians participated in the construction of the PBL case scenarios were 1.7 (AOR = 1.7; 95% CI = 1.08–2.68) times more likely to favor the h-PBL curriculum. Lastly, the odds of having favorable attitude toward the h-PBL curriculum were more than two times (AOR = 2.26; 95% CI = 1.2–4.16) higher among academicians whose department possessed rooms set aside for PBL sessions (Table 3).

Discussion

The hybrid problem-based learning model, which was recently adopted by medical colleges in Ethiopia, established a contractual agreement between tutors, students, and institutions. However, the shift of role from teacher to facilitator is challenging for novices whose teaching experience and educational background are based on the traditional approach, which most Ethiopians share. As a result, tutors are frequently confused about their role as facilitators of learning in PBL.

Table 1 Sociodemographic Characteristics of Academicians in the University of Gondar College of Medicine and Health Sciences, 2021 (N = 415)

Variable	Frequency	Percentage (%)
Sex		
Male	302	72.8
Female	113	27.2
Age		
25–29	109	26.3
30–34	208	50.1
≥35	98	23.6
Religion		
Orthodox Christian	320	77.1
Protestant Christian	52	12.5
Muslim	32	7.7
Catholic Christian	11	2.7
Marital status		
Married	268	64.6
Unmarried	147	35.4
Department		
Medical	26	6.3
Health officer	48	11.6
Pharmacy	37	8.9
Anesthesia	42	10.1
Medical laboratory	55	13.3
Midwifery	35	8.4
Nursing	52	12.5
Psychiatry	32	7.7
Health informatics	20	4.8
Physiotherapy	22	5.3
Environmental health	26	6.3
Optometry	20	4.8
Highest academic rank		
Graduate assistant	2	0.5
Assistant lecturer	37	8.9
Lecturer	219	52.8
Assistant professor	141	34
Associate professor	8	1.9
Professor	8	1.9
Average monthly income in ETB		
6500–10,499	147	35.4
10,500–14,499	170	41
≥14,500	98	23.6
Teaching experience in year		
≤4	169	40.7
5–9	216	52
≥10	30	7.2

Table 2 Bivariable and Multivariable Logistic Regression Analysis of Factors Affecting Academicians' Knowledge of the h-PBL Curriculum (N = 415)

Variable	Knowledge of the h-PBL		COR (95% CI)	AOR (95% CI)
	Good	Poor		
Age				
25–29	52	57	1	1
30–34	149	59	2.77 (1.71, 4.48)	2.97 (1.69, 5.23)***
≥35	74	24	3.38 (1.87, 6.12)	3.36 (1.6, 6.66)**
Marital status				
Married	188	80	0.6 (0.4, 0.9)	0.55 (0.54, 1.67)
Unmarried	87	60	1	1
Teaching currently				
Yes	214	86	2.2 (1.41, 3.43)	1.84 (1.1, 3.07)*
No	61	54	1	1
Experience in years				
≤4	95	74	1	1
5–9	160	56	2.23 (1.45, 3.42)	1.58 (0.9, 2.67)
≥10	20	10	1.56 (0.67, 3.52)	0.71 (0.26, 1.9)
Have taken training on PBL				
Yes	217	91	2.02 (1.28, 3.17)	1.9 (1.01, 2.7)*
No	58	49	1	1
Have constructed PBL cases				
Yes	180	68	2 (1.33–3.04)	1.54 (0.96, 2.46)
No	95	72	1	1
Have the department rooms set for PBL sessions?				
Yes	68	19	2.09 (1.2–3.65)	1.71 (0.92, 3.18)
No	207	121	1	1

Notes: *P≤0.01, **P ≤ 0.001, ***P ≤0.0001.

Therefore, this study aimed to assess factors affecting the academicians' knowledge and attitudes toward the h-PBL curriculum at the University of Gondar College of Medicine and Health Sciences.

The proportion of academicians having good knowledge about the h-PBL in this study was 66.3%. This finding is inconsistent with the reports from Kenya (38%)[17] and Saudi Arabia (76.5%).[22] This discrepancy may be explained by time gaps and difference in institutional characteristics. This discrepancy may be explained by time gaps and difference in institutional characteristics. This figure was higher than that of a Kenyon College, which had 65 instructors.

The Gondar college of Medicine and Health sciences is a leading medical teaching institution and a center of excellence with many professionals in several disciplines. Though not compulsory, content expertise is a key quality of successful PBL tutors.[9] In support of this, Brazilian medical students rated content experts as more effective PBL facilitators than non-content experts.[28] Besides, academicians in this institution may have better training opportunities than those at Kenyon College. Academicians, on the other hand, may have been more exposed to the concept of PBL than before due to its increasing application in medical education.[7] PBL has been used in Saudi Arabian medical schools for longer than it has in Ethiopia. Thus, those academicians in Saudi Arabia may have their educational background through it, received more PBL training or may have tutored for a longer period of time than Ethiopian Academicians. Academicians preferred the PBL model when they are trained in it,[29] and it is obvious that the more experience one gains in PBL, the more knowledge one will have of it.[17]

Table 3 Bivariable and Multivariable Logistic Regression Analysis of Factors Affecting Academicians' Attitude Towards the h-PBL Curriculum (N = 415)

Variables	Attitude Towards the h-PBL		COR (95% CI)	AOR (95% CI)
	Favorable	Unfavorable		
Age in year				
25–29	48	61	1	1
30–34	94	114	1.05 (0.66, 1.67)	1.01 (0.87, 1.23)
≥35	70	28	3.18 (1.78, 5.67)	3.69 (1.98, 6.89) ***
Marital status				
Married	153	115	1.98 (1.32, 2.99)	0.81 (0.45, 1.42)
Un-married	59	88	1	1
Experience in year				
≤4	66	103	1	1
5–9	130	86	2.36 (1.56, 3.56)	2.21 (1.85, 2.34) ***
≥10	16	14	1.78 (1.18, 3.8)	1.53 (1.03, 2.11) ***
Have taken training on PBL				
Yes	175	133	2.5 (1.58, 3.9)	1.93 (1.17, 2.8)*
No	37	70	1	1
Have constructed PBL cases				
Yes	137	111	1.51 (1.02, 2.25)	1.7 (1.08, 2.68)*
No	75	92	1	1
Have the department set rooms for PBL sessions				
Yes	53	34	1.66 (1.02, 2.68)	2.26 (1.2, 4.16)**
No	159	169	1	1
Have taken a course with PBL in your studies				
Yes	65	40	1.8 (1.15–2.83)	0.64 (0.35, 1.21)
No	147	163	1	1
Have ever delivered a course with PBL				
Yes	58	35	1.8 (1.13–2.9)	1.45 (0.7, 2.93)
No	154	168	1	1
There is a PBL coordinating body in your department				
Yes	95	64	1.76 (1.18–2.63)	0.81 (0.5, 1.29)
No	117	139	1	1

Notes: *P≤0.01, **P ≤ 0.001, ***P ≤0.0001.

In the final model, being aged 30 to 34 and older than 34 years were significantly associated with academicians' knowledge of the h-PBL.

Thus, compared to academicians under 30, the odds of having good knowledge were 2.9 and 3.3 times higher among academicians aged 30 to 34 and older than 34 years, respectively. This could be explained by the fact that among 56.3%

of academicians who were aged 30 to 34 were facilitating PBL session for at least two semesters, compared to 43.8% of those younger than 30.

Furthermore, among those over the age of 34, 69.2% and 30% of academicians experienced PBL tutoring for at least two semesters, respectively. This signifies that some groups of the faculty were favored to facilitate in PBL sessions which will increase their knowledge. In our study, 61.2% of academicians with the rank of assistant professor, 6.1% with the rank of associate professor, and 8.2% with the rank of professor were older than 34 years. In contrast, only 11% of respondents aged 30 to 34 were assistant professors, and none were professors. According to the literature, professors and associate professors had far more expertise on h-PBL.[22]

The study also found that academicians who were currently teaching were 1.8 times more likely to have good knowledge of the h-PBL than those who were not teaching at the time of data collection. This could be because academicians who were teaching at the time had a better understanding of the curriculum through problems they designed or co-authored with others.[10] Those who were not teaching at the time of data collection, on the other hand, may have missed out on PBL workshops, trainings, and conferences. Thus, academicians who were teaching may have used the h-PBL approach, leading them to know about it.

It was found that having PBL training doubled the odds of having a good knowledge of the h-PBL curriculum. This finding supports up findings from Saudi Arabia, where academicians showed good PBL knowledge after first being trained and supported.[29] Consistent with this, training is the most important element in preparing faculty for tutoring, specifically for tutors with content expertise.[5,9] The majority of academicians reported that PBL training enhanced their understanding of the PBL as an instructional approach and their role as tutors, as well as their understanding of tutorial group dynamics and assessment in PBL.[30]

In this study, academicians' favorable attitude towards the h-PBL curriculum was found to be 51.1%, which is similar with a report from Kenya - 48.6%,[17] but lower than studies conducted in Nigeria – 80%[20] and Saudi Arabia – 66.7%.[22] The agreement with the Kenyon report could be explained by the fact that the academicians were assessed after both institutions had already adopted the curriculum and trained their faculty about it. The inconsistency of this finding with reports from Nigeria and Saudi Arabia can be justified by the time lag in adopting the h-PBL curriculum and disparities in institutional experience with it. The study in Nigeria was conducted prior to the adoption of the curriculum. As a result, the respondents may be unaware of the challenges inherent to the h-PBL curriculum implementation.[31] However, it must be noted that PBL approach is resource intensive, difficult to organize, and structure, demanding a huge tutor effort.[29] In contrast, the Saudi Arabia study was conducted after PBL had already been in practice in medical education for a far longer period of time than it is in Ethiopia. This may familiarize academics with and lead them to favorably accept it. It was suggested that the faculty would favor an instructional approach with which they are most familiar.[14] In our study, academicians who had been facilitating PBL sessions for at least two semesters were 55.4%, while it was only 34.6% for those who had tutored for one semester or not at all. Academicians older than 34 years were 3.7 times more likely to favor the h-PBL than those younger than 30 years. In this study, among academicians with good knowledge (65%), some may have also had favorable attitudes. Furthermore, it is established that professors and associate professors had significantly higher knowledge score,[22] which will lead to a higher attitude score. Associate professors and professors comprised 14.3% of academicians older than 34 years, while none were younger than 30.

Compared with academicians with at most four years of experience, the odds of having a favorable attitude toward the h-PBL were two and 1.5 times higher among those with 5 to 9 years and more than 10 years of experience, respectively. Long-served experts may have so far attended PBL-related courses or visited other facilities and shared experiences of how PBL has been implemented elsewhere. They may also expose to the concepts of the innovative h-PBL curriculum through workshops and trainings which will clear their misconceptions about it.[5] When tutors have had more experience, PBL learning outcomes were improved, which would not be possible unless they had a positive attitude towards the curriculum.[32] Moreover, academicians may increase their acquaintance with the h-PBL curriculum through collaboration to solve variety of problems in their longer academic services.[10] However, faculty experience cannot guarantee acceptance of the h-PBL curriculum as observed from a Ghanaian institution at which the curriculum faced rejection from experts early in its adoption.[5]

It was found that training in h-PBL increased academicians' favorable attitude about it by two times more than their counterparts. This finding is not surprising that tutors who received training on PBL curriculum were more likely to be happy with[30] and favorably accept it.[29] In this way, new tutors are encouraged to get training to smoothly transition from a role of teacher to facilitator. In support of this, the experience of a Ghanaian medical school suggests PBL workshops to introduce content experts and prevent curricular failure.[5] Similarly, when compared to their counterparts, those who participated in the development of the PBL case scenarios were 1.7 times more likely to favor the h-PBL curriculum. This can be attributed to the fact that tutors who were engaged in constructing PBL scenarios may have assumed their role while designing or co-authoring of the instructional problems.[10]

Academicians were more than twice more likely than their counterparts to favor the h-PBL curriculum when their department had rooms set aside for PBL sessions. This could be attributed to the fact that the faculty may be aware that PBL needs specially equipped tutorial rooms,[5] and though the college has no purpose-built PBL rooms and most of them are not well equipped, the faculty may feel secure and confident to accept the curriculum given their recognition of existence of adequate infrastructure and coordination to implement it.[29]

Limitations of the Study

As a limitation, the authors acknowledged the cross-sectional nature of the study design, making it difficult to establish causality between knowledge and attitude with the independent variables. In addition, the study lacks qualitative components to assess individual beliefs which are very important in adopting the new curriculum. Finally, we did not get enough reports to compare our results, which would have shown most of the institutional disparities. This study, on the other hand, tried to assess a much less addressed issue of medical education in Ethiopia early in its adoption of the hybrid problem-based curriculum. The findings will be valuable to evaluate the effectiveness of curriculum implementation and make contextually adaptable strategies that suit our sociocultural, economic and educational diversity. More importantly, the academicians' lower favorable attitude despite a relatively higher knowledge about the h-PBL curriculum will imply serious objections for it. Thus, we suggest for exploratory research.

Conclusion

Academicians were found to have a good knowledge and a favorable attitude toward the hybrid problem-based learning curriculum. Good knowledge of the h-PBL curriculum was associated being between the ages of 30 and 34, being older than 34, being currently teaching and having received training about PBL. Academicians' favorable attitude was found to be significantly associated with being older than 34 years, having five to nine years of teaching experience, having at least ten years of teaching experience, having received training about, having constructed PBL case scenarios, and having their department have rooms set aside for PBL sessions. Arranging more PBL training and making it compulsory to reach the whole faculty can improve their knowledge and attitude about the h-PBL curriculum. Encouraging junior faculty to participate in PBL case construction and tutoring in PBL sessions can increase their knowledge about and acceptance of the new curriculum. In addition, the findings recommend for increased support and collaboration in order to arrange rooms conducive to PBL sessions. Further research is necessary to see if the academicians have specific concerns and reservations about the h-PBL approach.

Abbreviations

AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; h-PBL, hybrid problem based learning; PBL, problem based learning.

Ethics Approval and Consent to Participate

The study was conducted in accordance with the declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board (IRB) of the University of Gondar. After properly describing the purpose of the study, each participant provided written consent and no private information was included in the questionnaire.

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Author Contributions

All authors made a significant contribution to the work reported in the conception, study design, execution, acquisition of data, analysis and interpretation; took part in drafting, revising and critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors declare that they have no competing interests in this work.

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