

A Study on Academic Appraisal Program: An Innovation towards Quality Assurance in Undergraduate Medical Education

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Abstract An efficient throughput process for an education environment is essential. Teaching learning is the key through-put process. For academic environment to be purposeful it has to be ensured that this remains relevant to the learner. The learning process involves critical steps, which should be safeguarded to ensure academic conduciveness. These can be the key objectives for any learning environment. If such objectives are benchmarked than they become standards. The best stakeholder to safe guard these standards would be the learner. Other stakeholders too participate and ensure the conduciveness through regular monitoring and reviews of the same. This is a quality management cycle. It is susceptible to failures, especially from the learner's point of view, despite being guarded by other stakeholders. Despite this being so valuable there are not many quality assurance processes/programs which assures that such environment are preserved, sustained and enhanced, as perceived by learner, particularly in medical education. The Academic Appraisal Program is developed and implemented to assure that learning process has gone well. It unfolds in a standardised manner with active involvement of all. The learning objectives laid/set are met efficiently and effectively, maintaining core learning elements relevant to learner. It is a quality assurance activity, empowering learners to control the learning environment towards effective dispensations as meant & perceived by them. It has been able to identify key quality initiatives as quality preserved, sustained and enhanced for Teaching-Learning.

Keywords: *quality assurance, academic appraisal program, teaching learning process, undergraduate medical education*

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1. Introduction

Over last 75 years medical education has evolved a lot. More and more focus has been on providing standard and quality medical education. The quality process in medical education are yet to be established, specially in developing world such as India. Through out the world these processes are different and mostly not imparted on regular and continuous manners, although basic standardisation has been taken care by the respective councils across the globe. The exit mechanisms for quality control are also well in place in many educational environments. Quality Assurances during the programs are not yet established.

One radical thought which has incorporated in educational thinking is that students are either a product or a producer, and in both cases the quality management process are required to be stringently enforced. The quality assurance which need to be internal institutional process are not in places, in the desired manner, as per the learners viewpoint. And that could be the reasons why perceptions and expectations gap are huge in nature between the learners and education managers.

Similarly the feedbacks for quality assurances are not yet established in the medical education and that too specifically in India. Such quality assurance should ensure that a standard educational environment is created and nurtured. But unfortunately it's very difficult to cater to, especially in the medical education because of variety of reasons including absence of a well-conceived program, which incorporates the steps relevant.

The Academic Appraisal Program (AcAP) at J.N. Medical College DMIMS (DU) may be the break through program for quality assurance fulfilling the most of the components of quality assurance cycle including - primary stakeholder continuous feedback on conduciveness of educational environment as a whole, being bench marked for standardisation. All students participate in this program. The faculty plays facilitator's role as education lead and academic lead supporting, managing and supervising the quality of learning process in their environment. Three reports are essentially generated -Pre-term, Midterm and Post-term. They are reviewed and monitored by administrators and policy makers, at College council, Joint College Council and Academic Council. The shortfall on any benchmarked objective are identified

for suitable remedial actions and followed up with corrective measures.

1.1. Objectives

The objective is to study the Academic Appraisal Program on undergraduate medicine course. To study the role of learner, faculty and education managers/administrators and its efficacy as quality assurance program towards the teaching-learning processes in medical education.

1.2. Study Design

It is a prospective study undertaken between 15th May 2013 to 31st Dec 2015, at J.N.Medical College, Datta Meghe Institute of Medical Sciences (Deemed University), Wardha, involving all the undergraduate students pursuing MBBS (Undergraduate) course.

2. Material and Method

The Academic Appraisal Program as implemented for MBBS course at J.N. Medical College and students pursuing the same during the Academic year 2014-15; and the data extracted from Input forms of Students, Education leads on marker points pertaining to all Major subjects;

Pre-term reports, mid term, post term and annual reports as submitted to College councils, Joint College council, Academic council with remedial actions undertaken; Annual reports of -2010,2011,2012,2013,2014 ; Results of summative examination of MBBS Course- Ist year, II year, III rd Part I & Part II.

Intervention tool: The Academic Appraisal Program (version 2.0)

Inclusion: All major subjects (directly evaluated) being taught in MBBS course - reports where the academic appraisal program is implemented and the marker point's evaluation took place between 1st July2014 to 30th June 2015.

Exclusion: Reports pertaining to minor subjects (indirectly evaluated).

2.1. Outcome Analysis

“Data is statistically analysed towards Objective wise Quantative & Qualitative Program outcomes by linear-correlations such as odds ratio, and paired observations by T test / student ratio and other quality analysis marker as deemed appropriate. Significance will be obtained at 5% level.

3. Observations and Results

Table 1A. Subject wise Ave.MP Scores for Each key Objectives

	1	2	3	4	5	6	7	8	9	10	11	12	13	Ave.
Anatomy	3.6	3.9	4.2	3.6	4.2	3.6	4.0	4.1	4.3			3.6	3.7	3.89
Physiology	3.9	3.8	4.3	3.9	4.3	3.7	4.1	4.1	4.2			3.7	3.9	3.99
Biochemistry	3.7	3.6	4.1	3.6	4.1	3.6	3.9	3.8	4.0			3.6	3.6	3.78
Pathology	4.4	4.1	4.2	3.9	4.2	3.6	4.0	4.0	4.3			3.6	4.1	4.03
Microbiology	4.1	4.0	4.2	3.9	4.3	3.6	3.9	4.1	4.2			3.5	4.0	3.98
Pharmacology	4.2	4.3	4.4	3.8	4.1	3.7	3.9	4.2	4.4			3.6	4.1	4.01
Forensic Medicine	4.4	4.1	4.2	3.9	4.1	3.6	4.1	4.2	4.3			3.7	4.1	4.06
Community Medicine	3.9	3.8	4.3	3.9	3.9	3.5	4.0	3.9	4.1			3.6	3.8	3.88
Ophthalmology	4.2	4.1	4.3	3.9	4.2	3.9	4.1	4.0		4.4	4.2	3.7	4.0	4.08
Ent	4.3	4.1	4.2	4.0	4.3	3.8	4.1	4.1		4.3	4.2	3.6	4.1	4.09
Gen.Medicine	4.2	4.1	4.3	3.9	3.9	3.8	3.9	3.9		4.3	4.2	3.6	4.1	4.01
Gen.Surgery	4.2	4.1	4.3	3.9	4.2	3.9	4.0	4.1		4.3	4.3	3.6	4.0	4.07
Obg&Gynae.	4.1	4.1	4.2	3.8	3.9	3.7	4.0	4.1		4.3	4.2	3.7	4.1	4.01
Pediatrics	4.0	4.1	4.3	3.9	4.1	3.8	4.1	4.1		4.1	4.2	3.6	3.9	4.01
Average	4.08	4.01	4.25	3.85	4.1	3.7	4.0	4.05	4.22	4.22	4.21	3.62	3.96	

Key Objectives: 1-Learning objective set; 2.Preparation of Topic; 3LRM resources; 4Speech & Audibility; 5Time Allotment; 6Interactivity; 7Understanding; 8.Ability to perform; 9Practical training-demonstration of techniques; 10 Adequacy of clinical material; 11Conduction of clinic; 12Infrastructure; 13Learning objectives Met.

Table 1B. Key Objective Scores

Descriptive Statistics of Key Objective Scores						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Learning objective SET	14	3.60	4.40	4.0853	.23256	.054
Preparation of topic	14	3.60	4.30	4.0140	.17262	.030
LRM resources	14	4.10	4.40	4.2500	.07319	.005
Speech & Audibility	14	3.60	4.00	3.8500	.11180	.012
Time Allotment	14	3.90	4.30	4.1267	.13870	.019
Interactivity	14	3.50	3.90	3.7000	.11952	.014
Understanding	14	3.90	4.10	4.0067	.07988	.006
Ability to perform- Psychomotor & Skill Training	14	3.80	4.20	4.0500	.11180	.013
Practical Training- Demonstration of techniques	8	4.00	4.40	4.2244	.11991	.014
Adequacy of clinical Material	6	4.10	4.40	4.2743	.09289	.009
Conduction of Clinic	6	4.20	4.30	4.2157	.03735	.001
Infrastructure	14	3.50	3.70	3.6213	.05579	.003
Learning Objective MET	14	3.60	4.10	3.9640	.15860	.025

Table 1C. Subject wise Marker Point analysis

Descriptive Statistics of Subject wise score						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Anatomy	11	3.60	4.30	3.8909	.28091	.079
Physiology	11	3.70	4.30	3.9909	.22115	.049
Biochemistry	11	3.60	4.10	3.7818	.20889	.044
Pathology	11	3.60	4.40	4.0364	.25796	.067
Microbiology	11	3.50	4.30	3.9818	.24827	.062
Pharmacology	11	3.60	4.40	4.0636	.27667	.077
Forensic Medicine	11	3.60	4.40	4.0636	.24196	.059
Community medicine	11	3.50	4.30	3.8818	.21826	.048
Ophthal	12	3.70	4.40	4.0833	.19462	.038
ENT	12	3.60	4.30	4.0917	.21088	.044
G Medicine	12	3.60	4.30	4.0167	.21672	.047
G Surgery	12	3.60	4.30	4.0750	.20944	.044
ObsGyn	12	3.70	4.30	4.0167	.19924	.040
Pediatrics	12	3.60	4.30	4.0167	.18990	.036

Table 2A. Subject wise Summative results

Subject wise	Student appeared	75% or more	60-74%	50-60%	Fail
ANATOMY	218	5	122	65	26
PHYSIOLOGY	227	10	141	44	32
BIOCHEMISTRY	221	5	135	57	24
PATHOLOGY	165	4	92	65	4
MICROBIOLOGY	162	7	92	62	1
PHARMACOLOGY	166	5	132	27	2
FORENSIC MEDICINE	163	0	81	80	2
COMMUNITY MEDICINE	169	0	76	93	0
OPHTHALMOLOGY	170	17	145	08	0
ENT	170	11	121	38	0
GEN.MEDICINE	145	0	72	69	4
GEN.SURGERY	142	0	69	65	8
OBSTETRICS & GYNAECOLOGY	142	1	77	61	3
PAEDIATRICS	141	2	104	35	0

Table 2B. AcAP Score*, Good quality result and overall passing %**

Subject	AcAP Score in %	GQR %	Overall passing
ANATOMY	77.8	58.25	88.07
PHYSIOLOGY	79.8	66.51	85.90
BIOCHEMISTRY	75.6	63.34	88.23
PATHOLOGY	79.6	61.11	97.57
MICROBIOLOGY	80.2	82.53	99.38
PHARMACOLOGY	81.2	49.69	98.79
FORENSIC MEDICINE	77.6	44.97	98.77
COMMUNITY MEDICINE	80.6	58.18	100
OPHTHALMOLOGY	81.6	95.29	100
ENT	81.8	77.64	100
GEN.MEDICINE	80.2	49.65	97.24
GEN.SURGERY	81.4	48.59	94.36
OBSTETRICS & GYNAECOLOGY	80.2	54.92	97.88
PAEDIATRICS	80.2	75.17	100

*AcAP Score = Subject-wise Average MP score in %

**Good Quality Result (GQR) = % of Students scoring above 60%.

Table 3. Qualitative Analysis of Program as a whole Average Score on individual objectives and key Appraisal

Learning Objective	Cumulative Score	Key appraisal
Learning objective SET	4.08	Non- matchability of content and objective in very few instances
Preparation of topic	4.01	Prefer intense preparation for few difficult topics
Teaching Resources	4.25	Use of standardized powerpoint LRM in classes
Speech & Audibility	3.88	Low audibility and use of other languages
Time Allotment	4.12	Adequate in most instances
Interactivity	3.7	Repeated appraisal to increase more inter-activities amongst learner & teacher
Understanding	4.0	Except for very high difficult index topic mostly have understood well
Psycho motor & skill training	4.05	Adequacy reflected on this count.
Practical Training - demonstration of techniques	4.22	Adequacy reflected on this count
Adequacy of Clinical Material	4.28	Abundant clinical material available though variety can be further strengthened
Conduction of Clinic	4.21	Adequacy reflected on this count
Infrastructure	3.62	Ongoing appraisal towards improvement is felt .
Learning Objective MET	3.96	Overall adequacy on this count despite seeking improvement in Infrastructure and Interactivity

Table 4. Key corrections - 5 years (objective -wise)

S.NO	Major Remedial action Planned	Corrective action taken	Person/Authority
1	Strengthening of Learning objective	Policy decision towards uniform inclusion of specific learning objectives in all subjects	Joint College Council and Academic Council
		Development & Inclusion of SLO	HOD and all faculty
2	Well Preparation of topics	Remedial teaching with adequate care	HOD and dedicated faculty
		Compulsory training by MET	Academic Council
3	Strengthening of learning resources Resources & its uniform usage	Policy Decision for development of Validated LRM	Joint college Council and College Council
		Development of Validated LRM	All Faculty & HOD
		Uniform & Mandatory Usage	Joint college council
		Online Server Based	Board of Management
4	Strengthening of Audibility and Speech	Updation of Audio systems	HOI
		Language Usage by Teacher	College council & HOD
		Other Language -learning for Learners- Additional Classes for Marathi	Joint College Council
5	Time Allotment :Prioritization for time along with competencies	Re-balancing the curriculums	Academic Council
		Additional / readjustment of classes	College Council, HOD & Education lead
6	Increase in Interactive Learning opportunities	Introduction of Interactive modalities such as Quizzes, MPBL	HOD & Faculties
		Readjustment of Curriculum with SGD's activity	HOI & HOD
		Creation of Self -Learning slots	College Council
7	Strengthening the Understanding in difficult topics	Remedial/ re-enforcement classes	HOD and Education Lead
		Deployment of "Lucid styled" teachers	HOD
8	Strengthening Psychomotor training	Re-structing of clinics	College Council & HOD
		Development of simulation ward	Board of Management
9	Strengthening the practical's & Self Learning	Museum Development	University
		3D virtual Dissections	HOI
10	Strengthening for Adequate Utilization of abundant Clinical material	Displaying list of Academically interesting cases at Dept. Offices- open for teaching all teachers	College Council, HOD and Faculties
11	Strengthening of Conduction of Clinic	Clinic Clinic Monitoring System	Joint college council & HOI
		Clinic Guidelines	Joint College Council
12	Concerns regarding Infrastructure		
12A	Visibility Of Teaching display Arena in few classroom	Front walls of Classroom developed as Teaching Walls! with Projection screen, Black/ green board/ white boards!	HOI
12B	Cooling in summers specifically	Air-conditioning of all lecture theatre	Board of Management
12C	Hard bench type of seating	Cushioning of Seats	HOI
12D	Strengthening of ICT Facilities	High resolution LCD projectors, E-podiums, Internet connection and Server based LRM availability	Board of Management & HOI
12E	Lecture theatre Allocations as per seniority and intensity of theoretical teaching	Re-allocation for each batch as per their preferences along with student council	HOI
13	Strengthening Of Academic Appraisal program,	Internal auditing-2013	Board of Management
		Allotment of dedicated class for marker point analysis in presence of education lead	College Council & Joint college council
		Development & Implementation of Version 2.0	Academic council and conveyor Academic appraisal program.
14	Strengthening the Adherence to Academic Activities	Monitoring of classes and clinics by Attendance cell	Joint college Council
		Development & usage of OMR sheets based system for attendance & Class monitoring	Board of Management
		Installations of Closed Circuit TV system for all classes at DEAN Chamber	Board of Management & HOI

At Institutional Level: 16/57 and Action taken at University Level: 23 /57. The corrective action required to be taken were almost uniformly spread across all the levels.

3.1. Result

Total Key Corrective actions: 57 actions; Corrective Actions taken at Departmental Level: 18/57, Action taken

Table 5. Quality Impact

Quality Impact	Score	Score in terms of %	Objectwise
Failed	<3.5/5	less than 70%	Nil
Preserved	3.5 -3.75 /5	70-75%	Interactivity
			Infrastructure
Sustenance	3.76-4.0	76-80%	Speech & Audibility
			Understanding
			Learning Objective Met
Enhanced	> 4.0	80%-100%	Learning Objective Set
			Preparation of Topic
			LRM Ressources
			Time Allotment
			Ability to perform- Psychomotor & Skill Training
			Ability to perform- Psychomotor & Skill Training
			Practical Training- Demonstration of techniques
			Adequacy of clinical Material
			Conduction of Clinic

4. Discussion

4.1. Role and Participation of Learner

The learning environment is basically spread over 4.5 years with 4 main batches. It is predominately dominated by females with M:F ration of 43:57%. Learners are the key to give and appraise the learning environment. They have been traditionally participating in quality control processes and now also in quality assurances [20-26]. In this study too the learner have regularly participated in the program. No Marker point was abandoned due to non participation of students. They have been critically able to appraise on each aspect of Learning's, giving a score on Likart scale of 5 for each objective .They have been categorically able to point the gaps, where-ever learning have not gone well . The Scores reflect that learners have participated in the program with full vigilance and not casually. The learners are wise enough to correlate the deficiency which has been a hindrance to their overall meeting of learning objectives. Various studies echoes the same and very categorically have roles in the learners to give them feedbacks for gaps in their learning environments [27,28,29]. They have been able to identify the difficulties in logistic implementation of the program and have suggested to it to be undertaken as Online program. The "learner centricity" in quality assurance is essential. There are many studies which have been bringing to forth the significance an impact of students participation, feed back and proactive involvement in the educational environment [4,5,6,7,21,22,29,31,33,35,37,40,41,47,48,49,50,51]. This study too reflects and echoes the same. The academic appraisal program has made them to lead the through put - learning process, in very structure red and definite way, assuring that quality is achieved through out the curriculum dispensation.

Role and participation of Faculty: The faculty is very actively involved in the program as education-lead and academic lead. The education lead have regularly participated in the program. They have been able to place the Marker points on the curriculum & syllabus as to be dispensed for the forth coming terms. They have taken up the role regarding timely appraisal of the Marker points and further analyzed the scores highlighting the deficiencies

in learning environment, as pointed out by learners. They too have identified the logistic difficulties and suggested for Online Version. The Academic Lead have timely analyzed the reports as submitted by the education leads in a detailed manner, and put forth few actions for policy decisions. The Academic lead has analyzed further and presented in the monthly college councils characterizing the deficiencies/ gaps for remedial action at appropriate levels. The academic lead have taken appropriate actions including urgent actions along with HODs, for immediate intervention. The role of faculty is like a facilitator - guide and supervise both, towards effective dispensation of learning processes, helping to overcome every barrier as pointed out by the learners in attaining their objectives. The same is repeatedly reflected by World Federation of Medical Education [41,42,43,44,45]. They have been categorically stating that roles are changing and learners need facilitators to help, guide and achieve the goals and objectives of medical education. The teachers should now merge into such roles.

Role and participation of Administrators /education managers and Policy makers.: The Policy makers have been actively involved in reviewing and monitoring the academic appraisal program. The administrative adherences to the program has been observed to the extent of 98%. The program has never been felt under any threats or have suffered in terms timely dispensations of review on gaps, planning remedies and taking corrective actions. The Academic Council, Joint College Council and College Councils along with HOD, HOI, University officials, Key administrators and Policy makers have intervened in desirable manner including Enhancements in Infrastructure, Curriculums, Syllabus, ICT facilities etc.

The basic onus of Fostering the conduciveness of learning environment towards preservation, sustenance and enhancements; through out the program lies on all the stakeholders and nobody is above a conducive learning environment. The three main pillar of learning environments Learners, Faculties and education keepers all have to come on a uniform platform with uniform concerns, accepting the gaps with big hearts, setting up a monitoring & review processes and prioritizing the corrective actions implementations. If it happens in a structured manner, quality assurance of learning process is ensured [1,2,10,16,18,19,25,27,28,32,34,39,43,44,45,46,47].

The teaching environment planned at J.N.Medical College, is well conceived and in alignment with the Medical Council of India [14]. The number of hours are almost 10%-15% more. This is possible because at the DMIMS(DU) has more number of academic days, than as minimum prescribed by University Grant Commission which is 240. In the academic year 2014-15 the number of academic days were 282. This helped in conduction of remedial and extra teachings, further helping in sustaining the academic environment. The classes were held with regularity to the extent of average 99.13%. The main reason for the Classes not able to be held as per plan was mainly, due to the teachers inability. Being in medical field with patient as priority, this was mostly justified due to contingencies rehiring emergency care. Though there is a provision of imposing fine on teachers and students for their unjustified absence. Only in very few instances this was needed to be done. The classes not held were adequately compensated by taking remedial classes. These remedial classes also included those which failed to get a quality approval by not meeting the benchmarked standard. Such events was .08% (7 / 8303). The additional classes including both remedial and capsulated teaching program were held to the extent of 2.25%, hence adequately compensating activities as per the plan but missed or needed reinforcements. The marker points adequately covered the whole syllabus, evenly spread out across, covering the themes and topics as per the needs as per the retirement of the course. The attendance of learners have correlated directly with their performance in exit examination. More they attended the classes more the chances of passing was observed. Many other studies have also concluded the same, that as medical learning's are more training based, hence the participation of learner is essential for good learning. [7,8,12,13,23,53,54] The quality assurance measure undertaken to ensure the adequate participation and monitoring through attendance cell is definitely helping the learners to regularly attend the classes.

The results of summative examinations also correlates directly with the quality assurance through AcAP, in almost all the subject with exception of 2 subjects in which despite the low score the result was above the average. These low scores were well above the benchmarked score. This ensured that if a learner assures of having met the learning objectives as per the bench marks in the AcAP than perhaps he has learnt well and will turn out to be a useful product in the community.

The assessments are very important part of the quality control process [17,26,27].

Exit examinations evaluate the learners against their acquisition of knowledge, its a quality control activity than quality assurances; also its not possible to evaluate the learners against all the knowledge gain opportunity through exit examinations. But its very important aspect as along with the internal quality assurance, the quality control activity complete quality cycle is achieved With Quality assurance like AcAP, the learners led process; and exit assessments which are faculty led processes, a quality circle is created along with counter check mechanism. It is extremely necessary to realign the assessments with the teaching learning process as well [24].

The AcAP has been able to bring forth the quality assurances issues very categorically. The key objectives as

identified are main focus units on which the learners gains are based. They were able to identify these gains or loss at times and reflect through AcAP to indicate that things are dwindling and should be urgent corrected.

The scores on all the key areas where above the benchmarked standards, indicating that learning environment from learners view point had been conducive to make meaningful gains.

How meaningful where these gains is evolved by looking at outcomes of summative result, as its the program exit point and after that the learner as a product of the institute starts providing services to community. The results corroborate with the findings of AcAP. The GQR is almost mimicking the scores of AcAP. The 4 subjects with highest GQR more than 75% are Microbiology, Ophthalmology, ENT and Paediatrics. In all 3 of them the AcAP score is more than 4.0 and in one 3.98. hence in these subjects a quality enhanced environment is developed and is well reflected in the results too. This validates that AcAP which is learner led and exit examination which is teacher led both concludes almost similarly.

The Average AcAP score for the institution is 3.99 / 5, which is just short of academically enhanced learning environment. The major quality assurance had been that the 64% of learners exited the course as good quality result category. Overall passing rate had been 97.57%, which is strongly correlating that meeting of benchmarked AcAP scores is not a coincidence, learners where very well able to work towards the preservation, sustenance and enhancement. assuring that learning quality is taken care of, throughout the course dispensations. (Figure 1).

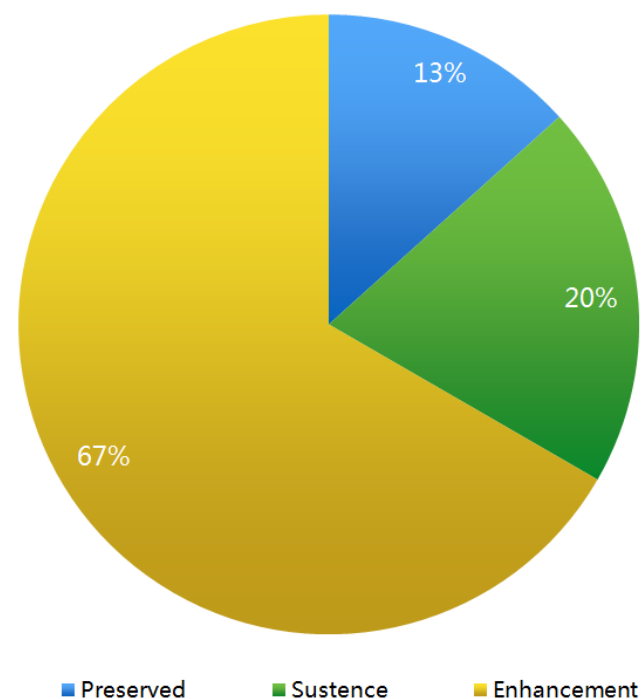


Figure 1. Key Objectives and Qulaity Impact

The Academic appraisal program is a quality assurance initiative led by learners and evoking all stakeholders - teachers and education managers participation towards developing a conducive academic environment in Medical education.

5. Limitations

The academic appraisal program is an effort for learner led quality appraisal. The outcome and impact is entirely dependent on effective & timely participation of the learners. Though mostly implemented in the manner and with dispositions as it is supposed to, but certain limitations have been observed: As the program is learner led. It becomes the major focus for corrections by all other stakeholders and perhaps other angles which may be as important for learning environment shifts to low priority. The objectives may not include all the components of learning environment, including an essential component of evaluation. As examination/evaluation and assessments are the priorities of students, their focus on topics which are more important from that view point take larger concerns than the whole curriculum towards acquiring their learning and competencies.

6. Conclusion

The academic appraisal program is an effective tool towards controlling the learning environment protected zealously by the learners (product). It has been able to create a platform dedicated towards preservation, sustenance & enhancement of learning environment by all stakeholders including Students, Faculties, Administrators, Managers and Policy makers; with learners leading from front. It is a well conceived, planned and implemented Program towards Academic Quality Assurance.

“The Academic Appraisal Program is quality assurance activity, empowering learners to control the learning environment towards effective dispensations as meant & perceived by them.”

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