

## ORIGINAL ARTICLE

ADAPTATION AND VALIDATION OF DUNDEE  
POLYPROFESSIONALISM INVENTORY-1 FOR USE IN PAKISTAN

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**Background:** Medical colleges want academic integrity in medical students. This will require measurement of professionalism. Dundee Poly-professionalism Inventory-1 is one of the few validated tools available to measure academic integrity. The purpose was to validate the Dundee Poly-professionalism Inventory-1 for use in Pakistan. **Methods:** In this cross sectional study words and statements in the inventory that a majority of Pakistani students could not understand were replaced by simpler words, or sentences for better understanding of our students. Faculty reviewed the proposed sanctions for their appropriateness in the Pakistani setting. A stratified sample of 64 students, and 16 faculty members were invited to participate in the study. **Results:** Out of 64 students, 57 students responded (Response rate 89%). Out of 16 faculty members, 12 responded (response rate 75%). The language of 8 statements in the inventory that a majority of students could not understand was changed. 50% or more of faculty members considered that the statements in the inventory were appropriate. 9 faculty members (75%) suggested, 'Making false entries in logbooks/signing such log books', and 10 faculty members (83%) suggested, 'Writing/getting signed false certificates' should be included in the inventory. These were included in the validated questionnaire. Similarly 50% or more of faculty considered that the different types of sanctions and that the levels of sanctions were appropriate. **Conclusion:** In this customised form the Dundee Poly Professionalism Inventory-I can be used in Pakistan, and other South Asian countries to assess professionalism related to academic integrity.

**Keywords:** Academic integrity, Poly Professional Inventory, Dundee, Pakistan

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## INTRODUCTION

Worldwide there is concern over academic dishonesty that seems to be common in many medical colleges<sup>1-3</sup> including Pakistan. Many problems have been reported lately related to academic dishonesty by Pakistani medical students and lapses in professionalism by Pakistani medical graduates, both within the country and in the world due to their migration. The examples include cheating<sup>4-6</sup> plagiarism<sup>7,8</sup> and unprofessional behaviour<sup>9</sup>. There are concerns in the developed countries about performance of doctors who are trained in Pakistan and other developing countries. Similarly there are reports that doctors in developed countries who were trained overseas are more likely to be subject to disciplinary action.<sup>10,11</sup> This is not what the medical councils want. They expect medical students to be professional on becoming doctors. This will require teaching, learning and assessment of professionalism in medical students internationally including Pakistan. Presently there are few validated teaching material or assessment strategies available. There is a growing need to develop a tool that is validated and robust to measure professionalism in medical students. In recent years researchers at the Centre for Medical Education, Dundee Medical School, Scotland, have done significant work to develop an inventory, named the Poly-professionalism inventory-I, for measuring academic integrity<sup>12</sup> in the UK. The same is needed in Pakistan. This will help in identifying issues related to

academic integrity in Pakistan and finding solutions. One way is to customize and validate Poly-professionalism inventory-I. Such an inventory will also be useful in South Asian countries that have culture similar to that of Pakistan. The purpose was to validate and if necessary, customise the Dundee Poly-professionalism Inventory-1 for use in Pakistan.

## MATERIAL AND METHODS

The cross sectional study was carried out at an undergraduate and a postgraduate Pakistani medical college. The undergraduate medical college runs a 5-year and the postgraduate medical college runs a 2-year medical education program respectively. The total population of the undergraduate medical college is 870 (750 students, and 120 faculty members). The total population of the postgraduate medical college is 240 (200 students, and 40 faculty members).

All students of each class were informed about the study by meeting each class separately in the lecture halls of both colleges. A nominal roll of those students who were interested in each class was used to construct the sample. A Participant Information sheet was distributed to the faculty members using the courier system of the colleges. The faculty was also apprised about the study by sending the participation information sheet by e-mail, or by telephone to those faculty members whose email addresses and telephone numbers were available. A nominal roll was made of the interested faculty, and was used for sampling. The

participant students had the option to identify themselves by college roll number. The faculty does not have roll number so they had the option of identifying themselves by name.

A total of 64 students, and 16 faculty members were asked to participate in the study. They were:

- 10 students each from first, second, third, fourth, and final year of Army Medical College. (AMC)
- 14 students each from junior, and senior year of AFPGMI each.
- 11 faculty members from AMC.
- 5 faculty members from AFPGMI.

The participants were sampled using stratified technique.

The selected students were assembled in a room, and the purpose of the study was explained. Informed written consent was taken from all the participants. They were asked to mark the words, or sentences in the inventory, which they could not understand. After completion, the inventories were collected.

The faculty members selected were personally contacted, and after obtaining informed written consent, they were asked to comment upon the appropriateness of behaviours listed in the inventory or add behaviours that they consider appropriate. Similarly they were asked to comment upon the appropriateness of the level of sanctions, and suggest appropriate changes, if needed. After completion, the inventories were collected.

SPSS-17 was used to analyse the data. Frequency, and percentage of words, and statements in the inventory, which the students could not understand were determined. Words and statements, which a majority of students could not understand were replaced by simpler words, or sentences for better understanding of our students.

A list of behaviours, and sanctions in the inventory, which in the opinion of faculty was appropriate or inappropriate was made. Their frequency, and proportion was determined. A behaviour, or a level of sanction considered inappropriate by majority of the faculty members were excluded from the inventory. And a behaviour, or a level of sanction considered appropriate by majority of the faculty members were retained in the inventory

## RESULTS

Out of 64 students, 57 students responded (Response rate 89%). A majority of students were not aware of meanings of the words: (1) Coercing 37 (65%), (2) Plagiarizing 36 (63%), (3) Mitigating circumstances 33 (54%), (4) Extraneous circumstances 31 (54%), (5) Pedophilic 30(53%), (6) Sabotaging 29 (51%), and (7) Molesting 29 (51%), (Table-1). These words were replaced by their meanings as given in the online Oxford Dictionary of English, for better understanding of our students. The substituted words and statements were understood by majority of another group of 22 students (Tables-2 & 3).

Out of 16 faculty members, 12 responded (response rate 75%). 50% or more of faculty members considered that all the statements in the questionnaire were appropriate (Table-4). 9 faculty members (75%) suggested “Making false entries in logbooks/signing such log books”, and 10 faculty members (83%) suggested, “Writing/getting signed false certificates” should be included in the questionnaire (Table-4). These were included in the validated questionnaire.

Similarly 50% or more of faculty considered that all the different types of sanctions were appropriate (Table-5). All 12-faculty members (100%) agreed that levels of severity of sanctions were appropriate

**Table-1: Words whose meaning students were not aware of**

Words	Frequency (n=57)	Percentage (%)
Coercing	37	65
Plagiarizing	36	63
Mitigating circumstances	33	54
Extraneous circumstances	31	54
Pedophilic	30	53
Sabotaging	29	51
Molesting	29	51
Curriculum vitae	28	49
Citing	20	35
Forging	17	30
Intimidation	8	14
Crib sheets	7	12
Paraphrasing	6	11
Collaborative	3	5
Disguising	2	4
Assaulting	1	2
Pornographic images	1	2

**Table-2: Students’ understanding of substituted words**

Initial word	Substituted words	Frequency of students understanding substituted words (n=22)	Percentage of students understanding substituted word
Coercing	Persuading to do something by using force or threat	20	91
Plagiarizing	Take the work or idea of someone and pass it off as one’s own without acknowledging	22	100
Mitigating circumstances	Circumstances which lessen the gravity of an offence	22	100
Extraneous circumstances	Irrelevant or unrelated circumstances	22	100
Pedophilic	Sexual feeling directed towards children	19	86
Sabotaging	Deliberately damaging	21	95
Molesting	Assault or abuse sexually	22	100

**Table-3: Students' understanding of modified items**

Item No of questionnaire	Initial statement	Substituted statement	Students' understanding substituted statements (n=22)	
			Frequency	Percentage
1	Plagiarizing work from a fellow student or purchasing work from a supplier.	Take the work or idea from a fellow student and passing it off as one's own without acknowledging it or purchasing work from a supplier.	19	86
13	Sabotaging another students' work	Deliberately damaging another students' work	21	95
18	Coercing faculty members into providing copies of paper prior to exam through bribery or intimidation	Persuading faculty members into providing copies of paper prior to exam through bribery, force or threat.	18	81
21	Inventing extraneous circumstances to delay sitting in an exam	Inventing unrelated or irrelevant circumstances to delay sitting in an exam	21	95
36	Involved in pedophilic activities-possessing/viewing child pornography images.	Involved in activities with sexual feeling directed towards children- Possessing/viewing child pornography images.	22	100
37	Involvement in pedophilic activities – molesting children	Involvement in activities with sexual feeling directed towards children- Assaulting or sexually abusing children	22	100
	What level of sanctions (1-10) should apply for the first time offence with no mitigating circumstances	What level of sanctions (1-10) should apply for the first time offence without circumstances, which lessen the gravity of the offence	19	86

**Table-4: Faculty perceptions of appropriateness of statements**

Statements	Frequency & percentage of faculty (n=12)	
	Appropriate	Inappropriate
Plagiarizing work from a fellow student or purchasing work from a supplier.	12 (100%)	0
Completing work for another student.	10 (83%)	2 (17%)
Getting or giving help for coursework, against a teacher's rule (e.g. lending work to another student to look at).	10 (83%)	2 (17%)
Claiming collaborative work as one's individual effort.	12 (100%)	0
Paying a fellow student, or being paid by a fellow student, for completion of coursework.	12 (100%)	0
Resubmitting work previously submitted for a separate assignment or earlier work.	10 (83%)	2 (17%)
Intentionally paraphrasing text in an assignment, or copying text directly, without acknowledging the source.	10 (83%)	2 (17%)
Failing to correctly acknowledge a source (e.g. copying the text directly but only including the source in reference list)	12 (100%)	0
Citing sources that have not in fact been read in full.	6 (50%)	6 (50%)
Altering or manipulating data (e.g. adjusting the data to obtain a significant result)	12 (100%)	0
Accessing old exam papers or coursework, which have not been released to the whole class to assist in study.	7 (58%)	5 (42%)
Removing an assigned reference from the shelf in the library in order to prevent other students from gaining access to the information in it.	12 (100%)	0
Sabotaging another students' work	12 (100%)	0
Attempting to use personal relationships, bribes, or threats to gain academic advantage.	12 (100%)	0
Copying answers from a neighbour or enabling a neighbour to copy your answers during an exam.	12 (100%)	0
Exchanging answers using mobile phones during an exam.	12 (100%)	0
Receiving information about the paper from a student who have already sat in the exam, or providing information about a paper to students who have yet to sit in it.	12 (100%)	0
Coercing faculty members into providing copies of paper prior to exam through bribery or intimidation.	12 (100%)	0
Taking unauthorized material (e.g. crib sheets) into an exam.	12 (100%)	0
Sitting an examination for someone else, or someone else sit an examination for you.	12 (100%)	0
Inventing extraneous circumstances to delay sitting in an exam	10 (83%)	2 (17%)
Arranging to pass an exam using private connections, or bribery.	12 (100%)	0
Signing attendance sheet for absent friends, or asking classmates to sign attendance sheets for you in labs or lectures.	12 (100%)	0
Missing lectures frequently.	6 (50%)	6 (50%)
Intentionally falsifying the test results or treatment records in order to disguise mistakes.	12 (100%)	0
Failing to follow proper infection control procedures.	8 (67%)	4 (33%)
Examining patients without knowledge or consent of supervising clinician.	6 (50%)	6 (50%)
Forging a health care worker's signature on a piece of work, patient chart, grade sheet, or attendance sheet.	12 (100%)	0
Falsifying references or grades on curriculum vitae.	12 (100%)	0
Altering grades in official record.	12 (100%)	0
Sexually harassing a university employee or fellow student.	12 (100%)	0
Threatening or verbally abusing a university employee or fellow student.	10 (83%)	2 (17%)
Physically assaulting a university employee or fellow student.	10 (83%)	2 (17%)
Engaging in substance abuse (e.g., drugs)	6 (50%)	6 (50%)
Providing illegal drugs to the students.	10 (83%)	2 (17%)
Involved in pedophilic activities- e.g., Possessing/viewing of child pornography images.	8 (67%)	4 (33%)
Involvement in pedophilic activities – molesting children.	12 (100%)	0
Drinking alcohol over lunch and interviewing a patient in afternoon.	6 (50%)	6 (50%)
Lack of punctuality for classes.	12 (100%)	0
Not doing the part assigned to him/her in-group work.	12 (100%)	0
Damaging public property e.g., scribbling on desks, or chairs.	12 (100%)	0
Photographing dissection or prosection or cadaver material.	12 (100%)	0
Joking or speaking disrespectfully about bodies/body parts	12 (100%)	0
Inappropriate material about fellow students, teachers or patients on social media	12 (100%)	0
Inappropriate representation of Medicine in social media by posting photos/videos/texts about class or clinical activities	12 (100%)	0
Making false entries in logbook/signing such logbooks.	9 (75%)	X
Presenting false certificates/ signing false certificates.	10 (83%)	X

**Table-5: Faculty perceptions of appropriateness of different types of sanctions**

Sanctions	Frequency & percentage of faculty (n=12)	
	Appropriate	Inappropriate
None.	7 (58%)	5 (42%)
Reprimand (verbal warning).	12 (100%)	0
Reprimand (written warning)	12 (100%)	0
Reprimand, plus mandatory counselling	10 (83%)	2 (17%)
Reprimand, counselling, extra work assignment	12 (100%)	0
Failure of specific class/remedial work to gain credit	12 (100%)	0
Failure of specific year (repetition allowed)	12 (100%)	0
Expulsion from college (readmission after one year possible)	12 (100%)	0
Expulsion from college (no chance for readmission)	8 (67%)	4 (33%)
Report to professional regulatory body.	8 (67%)	4 (33%)

**Questionnaire**

		Q No 1 Is this wrong?	Q No 2 Do you think fellow students do this?	Q No 3 Have you ever done this in your present course?	Q No 4 Would you ever do this in your present course?	Q No 5 What level of sanctions (1-10) ** should apply for the first time offence without circumstances, which lessen the gravity of the offence?
Behaviors (Items)						
1	Take the work or idea from a fellow student and passing it off as one's own without acknowledging it or purchasing work from a supplier.					
2	Completing work for another student.					
3	Getting or giving help for coursework, against a teacher's rule (e.g. lending work to another student to look at).					
4	Claiming collaborative work as one's individual effort.					
5	Paying a fellow student, or being paid by a fellow student, for completion of coursework.					
6	Resubmitting work previously submitted for a separate assignment or earlier work.					
7	Intentionally paraphrasing text in an assignment, or copying text directly, without acknowledging the source.					
8	Failing to correctly acknowledge a source (e.g. copying the text directly but only including the source in reference list)					
9	Citing sources that have not in fact been read in full.					
10	Altering or manipulating data (e.g. adjusting the data to obtain a significant result)					
11	Accessing old exam papers or coursework, which have not been released to the whole class to assist in study.					
12	Removing an assigned reference from the shelf in the library in order to prevent other students from gaining access to the information in it.					
13	Deliberately damaging another students' work.					
14	Attempting to use personal relationships, bribes, or threats to gain academic advantage.					
15	Copying answers from a neighbour or enabling a neighbour to copy your answers during an exam.					
16	Exchanging answers using mobile phones during an exam.					
17	Receiving information about the paper from a student who have already sat in the exam, or providing information about a paper to students who have yet to sit in it.					
18	Persuading faculty members into providing copies of paper prior to exam through bribery, force or threat.					
19	Taking unauthorized material (e.g. crib sheets, "Bootee") into an exam.					
20	Sitting an examination for someone else, or someone else sit an examination for you.					
21	Inventing unrelated or irrelevant circumstances to delay sitting in an exam.					
22	Arranging to pass an exam using private connections, or bribery.					
23	Signing attendance sheet for absent friends, or asking classmates to sign attendance sheets for you in labs or lectures.					
24	Missing lectures frequently.					

25	Intentionally falsifying the test results or treatment records in order to disguise mistakes.					
26	Failing to follow proper infection control procedures.					
27	Examining patients without knowledge or consent of supervising clinician.					
28	Forging a health care worker's signature on a piece of work, patient chart, grade sheet, or attendance sheet.					
29	Falsifying references or grades on curriculum vitae.					
30	Altering grades in official record.					
31	Sexually harassing a university employee or fellow student.					
32	Threatening or verbally abusing a university employee or fellow student.					
33	Physically assaulting a university employee or fellow student.					
34	Engaging in substance abuse (e.g., drugs)					
35	Providing illegal drugs to the students.					
36	Involved in activities with sexual feeling directed towards children-Possessing/viewing child pornography images.					
37	Involvement in activities with sexual feeling directed towards children-Assaulting or sexually abusing children.					
38	Drinking alcohol over lunch and interviewing a patient in afternoon.					
39	Lack of punctuality for classes					
40	Not doing the part assigned to him/her in-group work.					
41	Damaging public property e.g. scribing on desks, or chairs.					
42	Photographing dissection or prosection or cadaver material.					
43	Joking or speaking disrespectfully about bodies/body parts					
44	Inappropriate material about fellow students, teachers or patients on social media					
45	Inappropriate representation of medicine in social media by posting photos/videos/texts about class or clinical activities					
46	Making false entries in logbook / signing such logbooks.					
47	Presenting false certificates/ signing false certificates.					

**\*\*Level of Sanctions:**

Level of Sanctions	Sanctions
1	None.
2	Reprimand (verbal warning).
3	Reprimand (written warning)
4	Reprimand, plus mandatory counselling
5	Reprimand, counselling, extra work assignment
6	Failure of specific class/remedial work to gain credit
7	Failure of specific year (repetition allowed)
8	Expulsion from college (readmission after 1 year possible)
9	Expulsion from college (no chance for readmission)
10	Report to professional regulatory body.

**DISCUSSION**

There is a need to develop a tool to measure professionalism in medical schools. Roff, McAleer, Chandratilake & Gibson reviewed more than 30 assessment studies in professionalism and could not identify normed inventories or rating systems relating to academic integrity<sup>13</sup>. They in recent years at the Centre for Medical Education, Dundee Medical School, Scotland, have done considerable work to develop an inventory, named the Poly professionalism Inventory-I, for measuring academic integrity. In order to identify items constituting lack of academic integrity they reviewed literature, and analysed more than 30 studies undertaken in undergraduate health profession education, related to academic integrity. Initially nearly one hundred items were identified. These items were

consolidated into 41 items, by researchers.<sup>12-14</sup> A further 4 items were added in further research conducted with faculty from the 11 educational institutions providing undergraduate teaching in Osteopathy in the UK.<sup>15</sup>

The Poly-professionalism inventory has questions that explore perceptions of students on the most frequent areas of concern related to student fitness to practice as outlined by the General Medical Council, UK: criminal conviction or caution, drug or alcohol abuse, aggressive, violent or threatening behaviour, persistent inappropriate attitude or behaviour, cheating or plagiarizing, dishonesty or fraud, and unprofessional behaviour of confidentiality or attitude.<sup>16</sup> These remain areas of concern worldwide. The Dundee Poly-professionalism Inventory-I has 45 items related to unprofessional behaviour and academic dishonesty, and 10 items about the appropriate sanctions to be applied for the first time student who lapse without mitigating circumstances. During validation 2 items were added to the original Poly-professionalism inventory-I for use in Pakistani medical schools.

**CONCLUSION**

In the customized form the Dundee Poly Professionalism Inventory-I can be used in Pakistan, and other South Asian countries to assess professionalism related to academic integrity.

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