

Women in Science : Worldwide Initiatives

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Initiatives towards ?

One among the several initiatives across the glob
➔ ASI gender sessions

Initiatives towards ?

1. **Identify** any factor that can impede or hinder the career progress
2. **Take** measures to make academia a better place

Let the Numbers Speak

Table 1: Country-wise Attrition of Women in Physics from Under-graduate to Professional Level

Country	Under-Graduate Level	Graduate Level	Professional Level
India	32 %	20%	11%
UK	20%	19%	9%
France	38%	20%	19%
USA	20%	15%	10%

Source: Adapted from data by Working group on Women in Physics (IUPAP). <http://w gwip.df.uba.ar/>

Female scientist fraction
Astrophysics inst (median) (median): ~ 10%
(Kharb 2014, ASI gender session 2014)

Women fellows of IAS ~ 7% (2013)*

INSA young sc. awardees ~ 14%
(2008-2014)*

IIT Directors : 0%

First IIT council members in 2014 (2 women)

* Shastri et al. Presentation at ICWIP, Waterloo, 2014

Why?



Meg Urry
Director of Yale Centre of A&A
AAS president

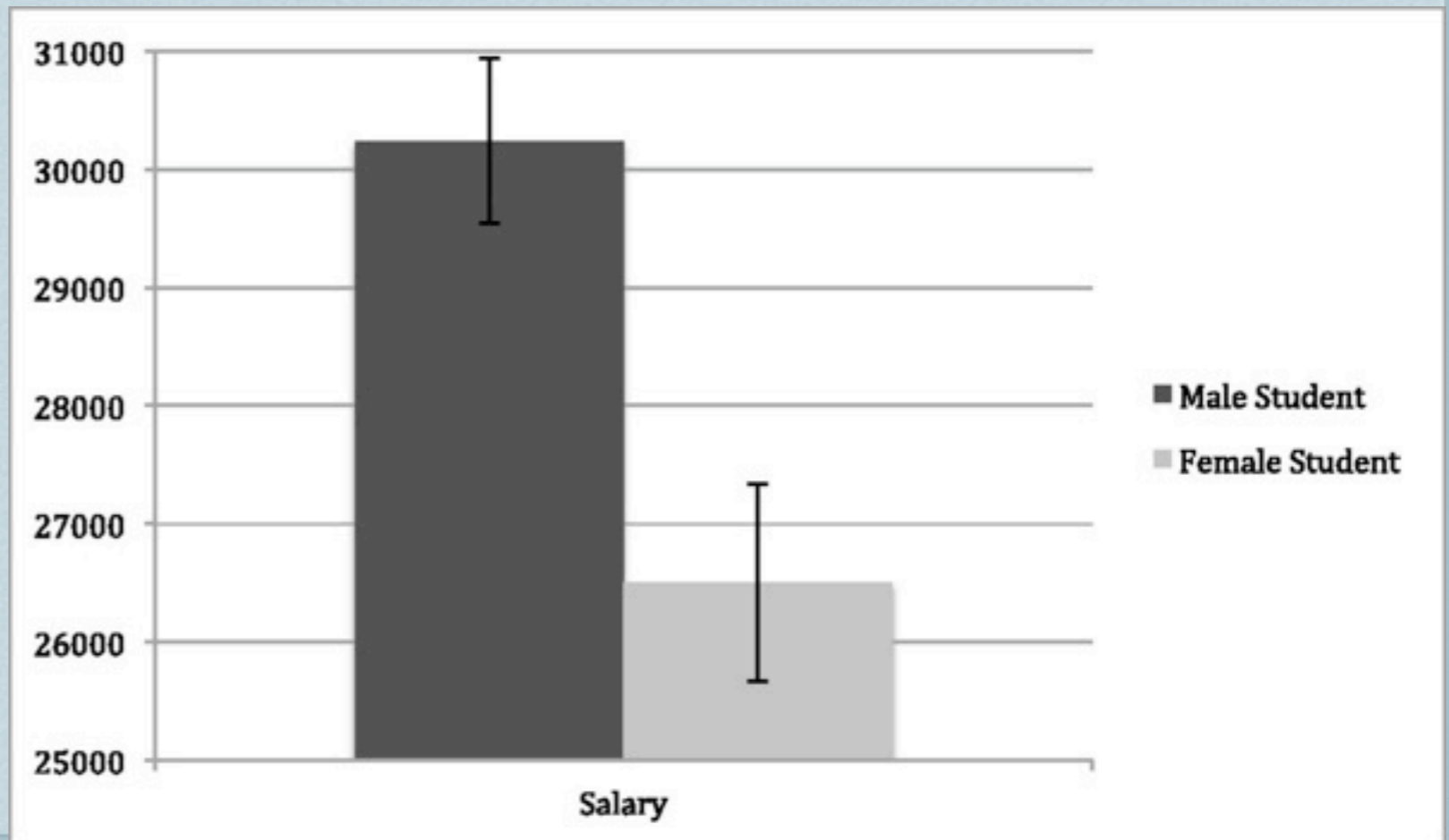
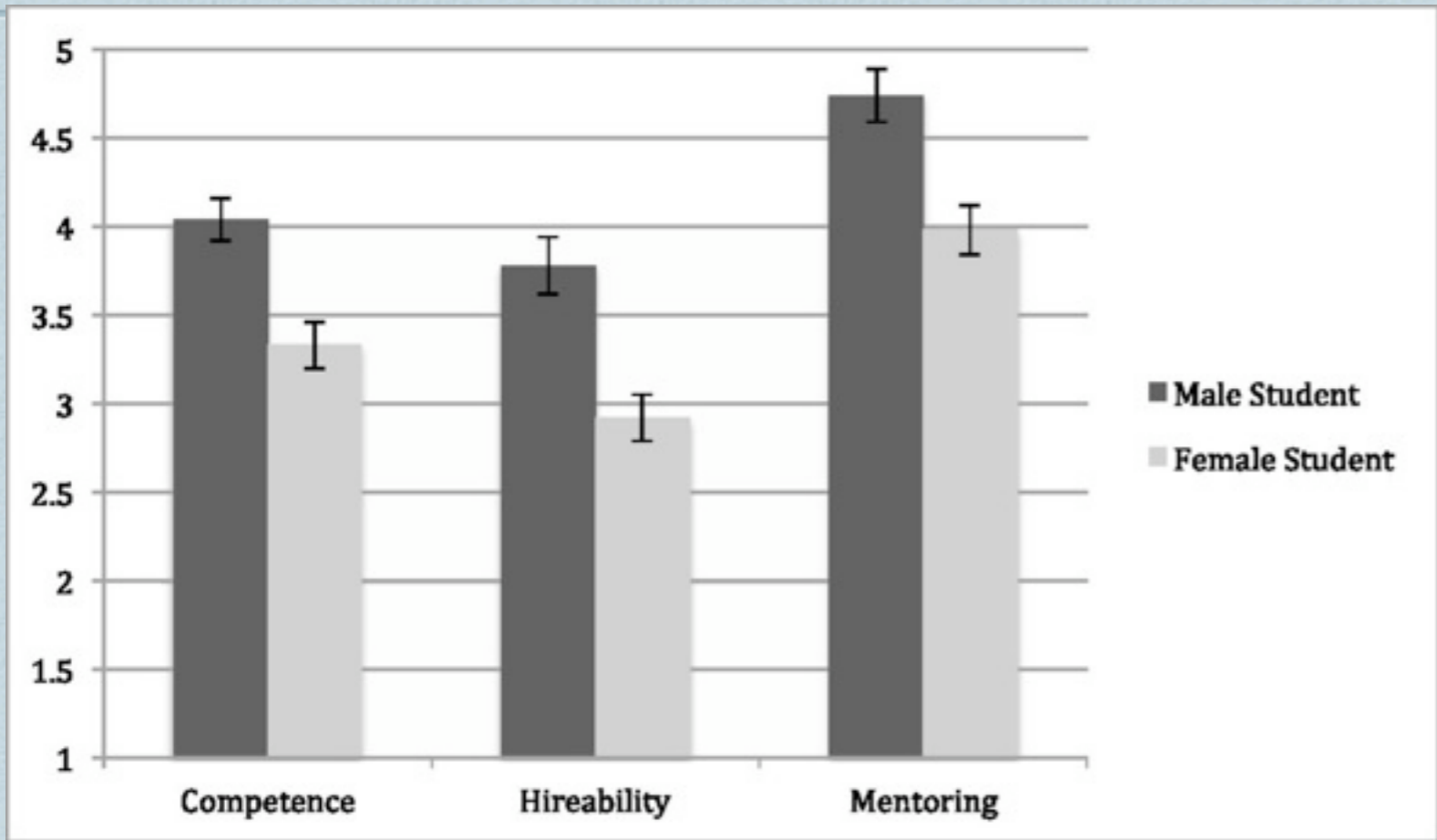
“Over the years, I saw women in the scientific world treated badly, being marginalized, mistreated, harassed..... After enough of this kind of thing, women feel beaten down and underappreciated, or worse, they feel incapable. That's the most insidious thing. After years of being passed over, ignored, and insulted, we start wondering what we are doing wrong. Maybe if I had made the suggestion differently, it would have been heard. Maybe if I lowered my voice and spoke more slowly, I would get more respect. Maybe -- even though I published many papers, did seminal work in more than one field, brought in big grants, had successful students and postdocs -- maybe I wasn't a good enough scientist.”

People's behaviour shaped by implicit or unintended bias.

Scientists, who have training to be objective, is no different.

Unconscious bias - I

- ❖ Moss-Racusin et al. , *Proceedings of National Academy of Sciences*, USA, 2012
- ❖ Application material for a student cum lab-manager was created
- ❖ And given to 127 faculty members (male & female) from various 'research intensive' universities (biology, chemistry & physics) in the US
- ❖ Randomly assigned either a male (63) or a female (64) name



Unconscious bias

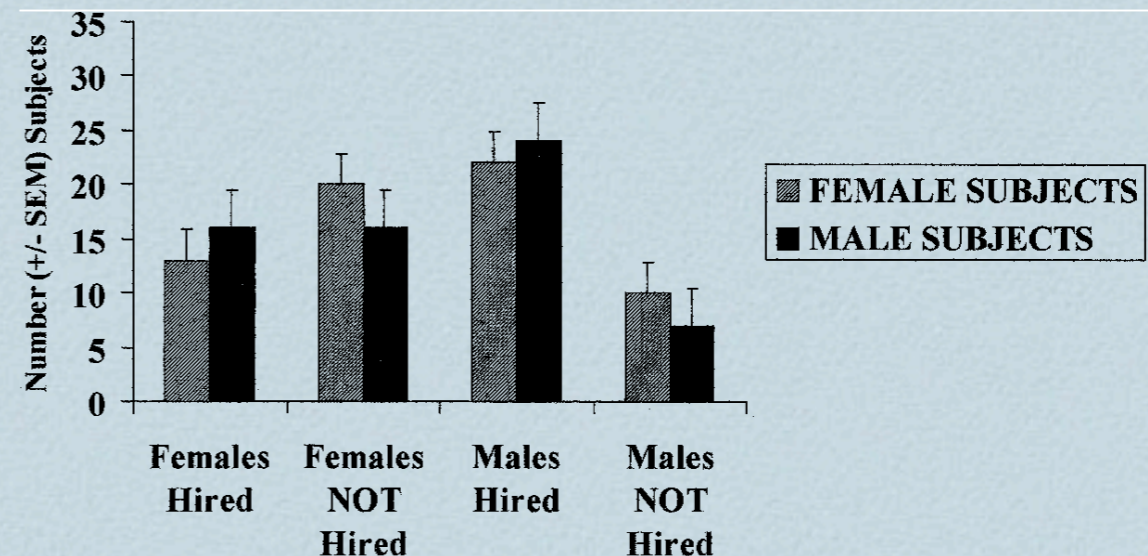
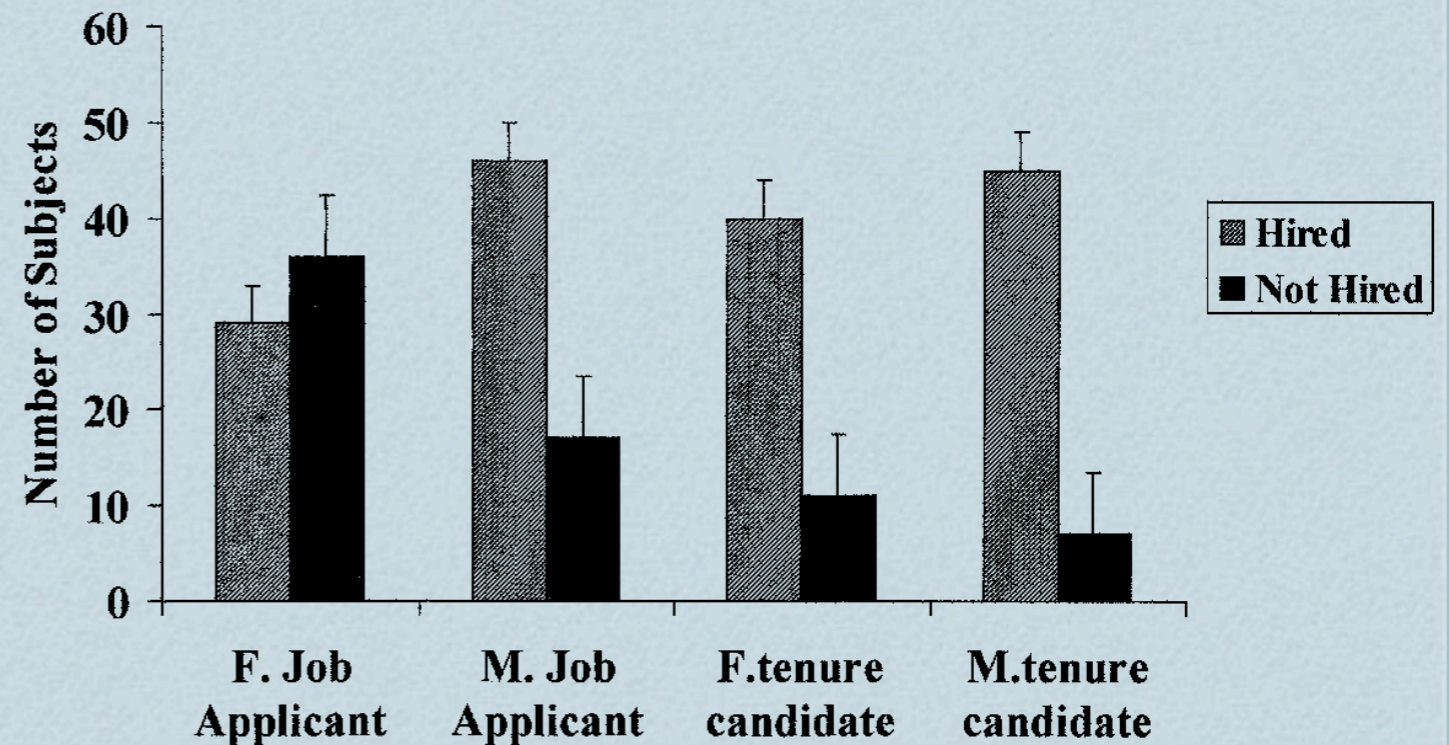
1. female student is **less likely** to be hired w.r.t an **identical** male student
2. even if hired, can be offered a **smaller** starting salary

Variable	Male target student				Female target student				
	Male faculty		Female faculty		Male faculty		Female faculty		d
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Competence	4.01 _a	(0.92)	4.1 _a	(1.19)	3.33 _b	(1.07)	3.32 _b	(1.10)	0.71
Hireability	3.74 _a	(1.24)	3.92 _a	(1.27)	2.96 _b	(1.13)	2.84 _b	(0.84)	0.75
Mentoring	4.74 _a	(1.11)	4.73 _a	(1.31)	4.00 _b	(1.21)	3.91 _b	(0.91)	0.67
Salary	30,520.83 _a	(5,764.86)	29,333.33 _a	(4,952.15)	27,111.11 _b	(6,948.58)	25,000.00 _b	(7,965.56)	0.60

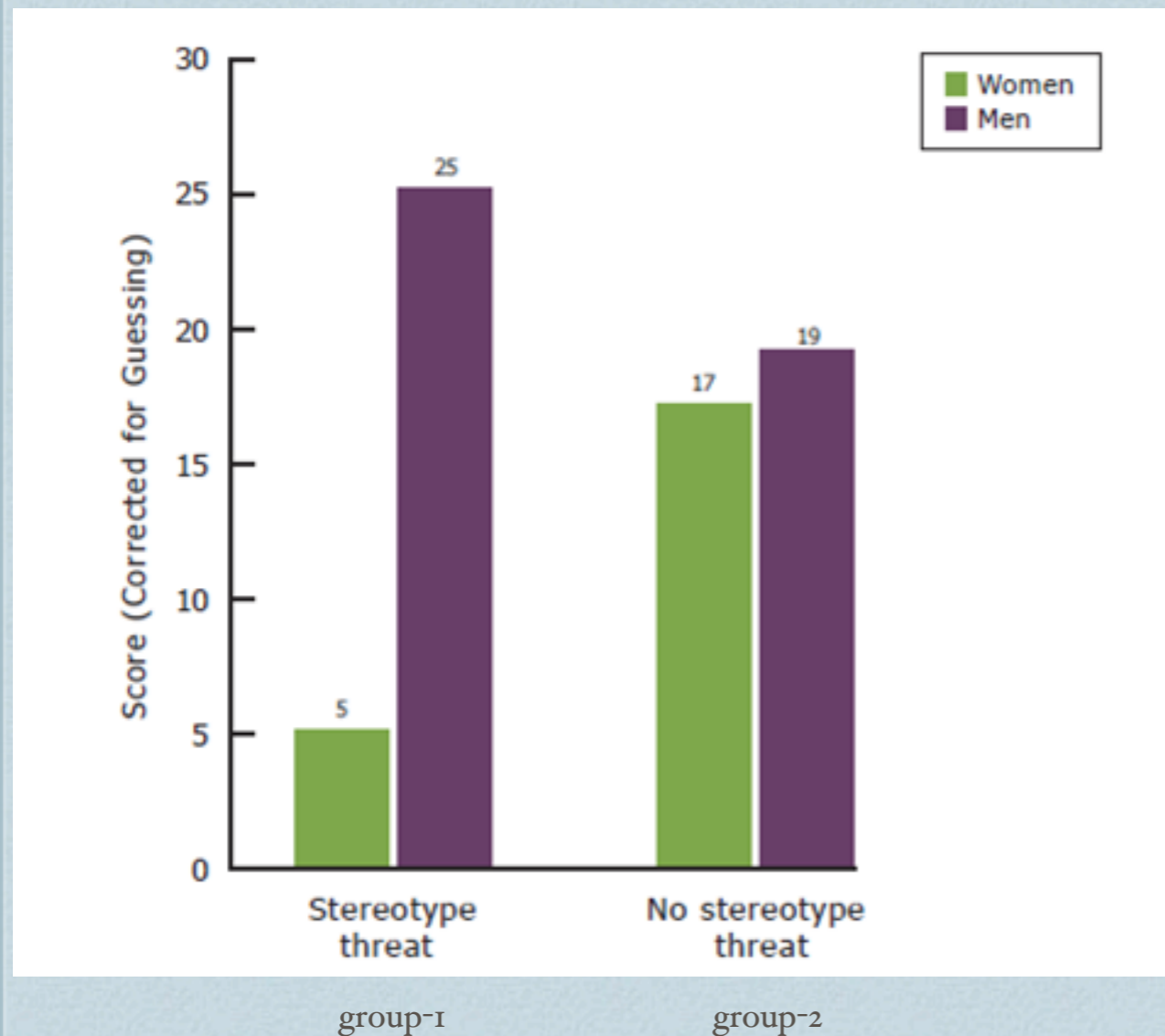
3. female faculty members show similar biases as male faculty members

Unconscious bias - II

- ❖ name-swapped CVs of a real-life scientist were sent to
- ❖ 238 (male & female academic psychologists (== subjects))
- ❖ for evaluating hireability



Stereotype Threat



- Students with similar math abilities are randomly divided into two groups
- Both groups contain men & women
- Same math test is given to both groups
- Before the test, Group-1 is told that men do better in this test than women
- Group-2 is told that it is a gender neutral test

Impostor syndrome

Individuals of both genders, but women more than men, feel that they are not as competent as their peers think they are. Lately, some resources with positive suggestions for addressing this problem have become available.

Initiatives

IUPAP WG5

- ❖ Working group for women in physics (1999)
- ❖ Survey situation of women scientists in member countries
- ❖ Suggest ways of improvement
- ❖ Conducts regular International Women in Physics meetings

worldwide initiatives



- ❖ Women in astronomy chapter of the Astronomical Society of Australia : established in 2009
 - ❖ Monitor status of women
 - ❖ Keep accurate statistics
 - ❖ Help improve the status, appropriate representation in high level committees, seminars etc.

worldwide initiatives

AAS Committee on the Status of Women



- ❖ Established in 1979
- ❖ Recommend practical measures to help improve women's status
- ❖ Regular sessions during AAS meeting

IoP UK : project Juno

- ❖ Institute of Physics : UK's national body for physics community
- ❖ Project **JUNO** : Award scheme to recognize & reward departments that are addressing under-representation of women
- ❖ Established in 2007

Juno : 5 principles

1. Organizational framework to deliver equality of opportunity
 - ❖ monitor data
2. Appointment/selection procedures are such that men & women are encouraged to apply for academic posts of all levels
 - ❖ career breaks are taken into consideration, gender awareness to interview panel
3. Departmental structures & systems to encourage career progress of all staff
 - ❖ mentoring scheme, transparent promotion schemes

Juno : 5 principles

4. Dept. organization/structure/management/culture : open & inclusive

- ❖ encourage female seminar speakers, use positive inclusive images in communication

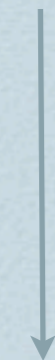
5. Flexible approaches & provisions to enable all individuals for the best contribution to department

- ❖ flexible work hours, encourage paternity/caring leave, support for people returning from career break

Juno : levels

Supporter

begins Juno journey



25

Practitioner

Well into it



11

Champion

5 principles are embedded throughout



10

No. of departments currently

Result in last 6 years

Professors	5%	to	9%
Senior lecturers	14.8%	to	19%
Researchers	17%	to	19%

What can we do?

- ❖ Awareness & mentoring programs
- ❖ Policy measures to monitor & improve status of women