







REVIEW

# Enabling positive practice environments for women in science and education with FIPWiSE toolkit

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## Keywords

Gender equity  
Pharmaceutical science  
Pharmacy education  
Positive practice environment  
Women in education  
Women in science

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## Abstract

Positive practice environments (PPEs) support the recruitment and retention of employees, enable the delivery of high-quality work outcomes, and benefit society as a whole. It is necessary to provide equal rights, obligations, equal treatment, and opportunities for all genders according to their needs to achieve gender equity and PPEs in workplaces. FIP developed the FIPWiSE (the FIP women in science and education initiative) toolkit for positive practice environments for women in science and education to support and enable them by building on the World Health Professional Alliances (WHPA) PPE campaign. FIP is a founding member of the WHPA and used the toolkit as a basis to describe and identify factors that enable PPEs from a pharmaceutical science and pharmacy education perspective. The toolkit provides a set of possible solutions related to women in science and education for individuals, employers, institutions, and policymakers, as well as real-life examples, perspectives, and good practice implementations and suggestions from women from all around the world.

## Introduction

According to the World Health Organisation (WHO), a shortage of 18 million healthcare workers is expected worldwide by 2030 without a serious focus on the global health workforce crisis (WHO, 2021). Reasons for this shortage are varied and complex; however, the principal cause is the low quality of healthcare workplaces, which leads to weakened health services and poor efficiency, productivity, and satisfaction of healthcare workers. The COVID-19 pandemic has now brought us face to face with the importance of the need to ensure safe and purposeful practice environments for healthcare professionals. Establishing positive practice environments (PPE) in healthcare systems worldwide is crucial to ensuring the well-being and safety of employees (WHO, 2021; WHPA, 2021).

The global tendency to develop a more cohesive and productive healthcare workforce is based on the establishment of gender equity in workplaces. The importance of gender equity is highlighted as one of the 17 United Nations Sustainable Development Goals (SDGs) and 21 International Pharmaceutical Federation (FIP) Development Goals (DGs) (UN Women, 2021; FIP, 2020). It is necessary to provide equal rights, obligations, equal treatment, and opportunities for all genders according to their needs to achieve gender equity. Implementing gender equity in workplace environments results in improved organisational performance and reputation, as well as increased national productivity and economic growth (ILO, 2020). Yet, gender inequities often occur in different parts of health organisational structures, practices, science, and education (Stamarski & Son Hing, 2015).

Although progress is being made to increase their involvement across different areas, women are still underrepresented across the broader science, technology and education sectors. Nowadays, gender inequities in the workplace are far from being just a statistical representation of imbalance between men and women; they represent a considerable challenge at local, national and global levels. Urgent actions are needed with continuous recognition and acknowledgement of women in pharmaceutical science and pharmacy education to achieve equity in workplace environments. It is crucial to raise awareness of gender inequities in the pharmaceutical workforce and, therefore, to develop strategies to improve gender equity and equality (WHO, 2021; Pakistan Pharmacist Association, 2020; Bader *et al.*, 2018).

Through developing the toolkit, FIP aimed to address the workplace environment inequalities and inequities that affect women in pharmaceutical science and pharmacy education, taking transferable learnings across the rest of the pharmaceutical workforce. The toolkit is designed to raise awareness and provide possible solutions for individuals, employers, and institutions to enable PPEs for women. Those who are within FIPWiSE shared their vision for PPEs by reviewing the literature on gender equity and female empowerment, putting together practical approaches and sharing some of their personal reflections in case studies.

### **Delving deeper into specific aspects of positive practice environments**

Five factors were identified based on the PPEs campaign of the World Health Professional Alliance (WHPA), literature, and shared experiences by the FIPWiSE Working Group to cover all aspects women face in their working environments.

#### **Factor 1. Equal incentives for equal work**

Incentives are an important means of attracting, retaining, motivating, and improving the performance of employees. Incentives can be applied to groups, organisations, and individuals and may vary according to the type of employer and the preferences and motivators of each professional. Incentives can be positive or negative (as in disincentives), tangible or intangible, and financial or non-financial.

Inequalities in pay between genders are often assessed through an indicator known as the gender pay gap. The gender pay gap measures the difference between male and female average earnings as a percentage of the male earnings (Oelz *et al.*, 2013). Overall, features such

as differences in educational levels, qualifications, work experience, occupational category, and hours worked account for the “explained” part of the gender pay gap. The remaining and more significant part, the “unexplained” portion of the pay gap, is attributable to the discrimination – conscious or unconscious – that is pervasive in workplaces (ILO, 2015). While the gap has been gradually closing over the past decades, there is still a substantial gender pay gap in many countries, ranging from a few per cent to over 40% (ILO, 2021).

At the same time, care needs to be taken to ensure that the ways the value is set do not replicate the assumptions that have always made men’s work appear more valuable. Therefore, it is essential that legislation should include means of assessing job values, independent of the employer and existing arrangements, and require the participation of affected women workers. It should also be possible to challenge job evaluation schemes on the grounds that they are gender discriminatory (Equality and Human Rights Commission, 2014).

Although unequal pay for the same work is unjust practice, eliminating it is an essential step but not the only step in the process. Where there is extensive job segregation, the problem is not solely that women are paid less for the same work but that they are a “secondary workforce”, concentrated in undervalued, “feminised” work. The concept of work of equal value insists that the comparison should not be limited to the content of the work but that the job requirements, such as the level of skill, effort and responsibility, and working conditions, be compared. In addition, it should be emphasised that there is a gender-based inequity in the acquisition of these skills by providing suitable environments and access to educational opportunities. For this reason, the lens of equity should also be used, especially in vocational training.

Working in the healthcare field requires a certain freedom of movement and freedom to use time. Issues such as having to work in a city other than the one you live in, compulsory service periods, and night shifts may cause a person to choose a profession influenced by their gender. The education of health professions, in our case, the pharmaceutical workforce, takes more years compared with other undergraduate education and vocational training. These features are criteria to be considered when choosing a field of undergraduate education. Women prefer, or are forced, to choose jobs that are intrinsic or an extension to the care process (ILO, 2017). The hierarchy of health professions is established accordingly. Medical doctors are at the top of the hierarchy and also carry certain hierarchies according to their specialities. In the formation of this hierarchy, it is of great importance that the jobs where

women are in the majority are paid less and are less supported, even if they are more difficult, due to general social discrimination (ILO, 2017). For this reason, it is crucial to encourage women and activate some incentives such as scholarships at the training stage, especially for the branches that appear at the top hierarchically.

### **Factor 2. Work-life balance**

Researchers and executives alike have a growing interest in work-life balance that constitutes a concern for both men and women with professional careers (Wong *et al.*, 2020). By definition, work-life balance is an individual's ability to meet their work and family commitments and other non-work responsibilities, activities, and roles in different life sectors, in addition to the relations between work and family obligations. It may also be defined as satisfaction and proper functioning at work and home with minimum role conflict (Delecta, 2011). In a more applicable aspect, work-life balance implies being able to satisfactorily fulfil the demands of three fundamental areas, i.e., work, family, and private life. Work-life balance is not the allocation of time equally among these areas; rather, it is the wise prioritisation and distribution of available resources like time, thought, and labour wisely among them (Wilcox, 2020). Simply stated, work-life balance is a concept that is both complex to define and difficult to achieve (Mattock, 2015).

Nowadays, the work-life balance appears hard to attain, with fears over job losses and advances in technology that have made workers accessible round the clock. However, compounding stress from a never-ending workday is damaging and can seriously hurt relationships, health, and happiness, ultimately resulting in burnout, which manifests as undesirable behaviour (Bajaj, 2018). Poor work-life balance was positively associated with poor health outcomes, such as fatigue, mental health issues, sickness, absenteeism, musculoskeletal diseases, and work-related health and safety risks (Choi & Kim, 2017). These adversities can partly be explained by multiple roles and an overload of demands and responsibilities among working adults (Lundberg *et al.*, 1994). The gendered realities of work-life balance, in particular the division of unpaid labour, such as childcare and household chores, were revealed and exaggerated towards women during the unprecedented time of the COVID-19 pandemic and the associated lockdowns (Hjálmsdóttir & Bjarnadóttir, 2020; Yerkes *et al.*, 2020). As such, it is imperative that women in science and education develop better integration of work and life. This factor of our toolkit aims to enhance the understanding of work-life balance for women in science and education and help formulate suggestions for better life satisfaction.

Women in scientific careers are constrained by conflicts between the normative demands of family and scientific research that calls for long working hours and frequent scientific mobility, such as conference attendance abroad, thus resulting in poor work-life balance and marital relationships and family suffering. It also leads to prejudice against women who choose to establish a career over marriage/a family life. Some women scientists face coerced social stereotypes that push them to get married and have children while their peers establish their science careers. Women scientists also experience inequitable structures of gendered support systems within institutions, with insufficient mentoring, lack of psychosocial support, lack of formal provision of flexible working time, underrepresentation in scientific leadership and decision-making bodies, and limited ability to strike a balance between family life and career (UK Collaborative on Development Research, 2021).

However, the outdated culture of "breadwinning men and homemaking women" and "farming men and weaving women", the traditional patterns of gender partition of labour have changed, and women's social roles have shifted from a single role of family to a dual role of family and career (UK Collaborative on Development Research, 2021).

### **Factor 3. Creating supportive and safe working environments**

The are difficulties in the education, employment, deployment, retention, and performance of the health workforce. Health systems are dependent on the availability, accessibility, acceptability and quality of health workers (WHPA, 2021). In addition, health professionals are humans and not robots. They have diverse personality traits, motivations, and drivers to keep in context when delivering their professional services. Hence, the working environment is a major determinant of the output and quality of work delivered by workers. Furthermore, the type of work environment is crucial in employee productivity and performance.

The working environment is composed of the physical, geographical location, the immediate surroundings of a workplace, and the perks and benefits associated with employment. Negative working conditions are defined as the circumstances such as working hours, level of stress, degree of safety, and/or level of danger that affect the workplace (Dictionary definition, 2021).

Negative work environments compromise the health workforce supply and quality of care. In healthcare settings, they contribute to medical errors, stress and "burnout", absenteeism, and high levels of staff turnover, which, in turn, can compromise the quality of

care. These environments are characterised by poor workplace ethics, violence, dysfunctional competition, cynicism, and unacceptable working conditions, such as bullying, insubordination, insolence, bad manners, etc. The healthcare professions are increasingly becoming exposed to acts of violence in both developed and developing countries, and women are at high risk of violent behaviour in the workplace (Martino, 2003). In general, women are more exposed than men to psychosocial risks at work (Wiskow & De Pietro, 2021; EU- OSHA, 2007). Workplace violence is defined as any act or threat of physical violence, harassment, intimidation, or threatening disruptive behaviour that occurs in the work site (Penfield, 2021). Women are more prone to customer/client violence, worker-to-worker violence, and violence at work (PSI, 2018). More women than men face discrimination and sexual harassment in the workplace, especially in occupations that are traditionally dominated by men (Parker, 2018). A young woman with an insecure job is much more likely to be exposed to the risk of sexual harassment than a mature male office worker with a permanent job (Wiskow & De Pietro, 2021).

Oppositely, a positive working environment supports excellence, decent work conditions with the power to attract and retain staff, provide quality care, and deliver cost-effective, people-centred healthcare services (WHPA, 2021). These aspects play a critical role in the existing shortage of health workers globally as it affects the recruitment and retention of health workers, thus enabling a safe and supportive workplace that helps them perform effectively (Wiskow & De Pietro, 2021).

#### **Factor 4. Opportunities for professional development, recognition and empowerment**

Professional development involves the training, certification, and education that an employee requires to advance in their profession. Although they meet expectations at the beginning of their work, employees may require more training as they develop through their career. Employees can gain abilities through professional development to become better and more efficient and grow in their respective fields. They can feel more confident in their abilities to succeed (Definition from American Hospital Academy, 2021). If they lack a specific talent or skill and support in which to grow, they will be less likely to stay in their job.

Professional development can be delivered in many ways. The most common examples of professional development and growth seen in pharmacy and pharmaceutical science include:

1. Continuing education, participation in professional organisations, and research.

2. Conducting research and presenting the results, improving job performance and keeping up with new developments and technologies, improving existing skills and increasing duties and responsibilities (Buffalo State College, 2021).

According to the WHPA, health professionals, including pharmacists, need health information to learn, diagnose, and educate patients and the public (WHPA Campaign Booklet, 2020). Professional development strategies are highly demanded to keep them up to date with relevant, adequate, and reliable information (FIP, 2020). When they do not have enough professional growth, their work or practice will be disempowered, and their sense of professional worth and job satisfaction will be reduced (WHPA Campaign Booklet, 2020). It can affect their professional recognition and empowerment (Mencarini, 2015), and their performance can also be discouraged.

Several universities and professional organisations have introduced professional development programmes. For example, the American Society of Health-System Pharmacists offers multidisciplinary professional development for pharmacists, pharmacy technicians, physicians, nurses, nurse practitioners, and other healthcare professionals (ASHP, 2021). The American Association of Colleges of Pharmacy developed traineeships, practice-based activities, and certificate programmes to provide additional knowledge and skills for pharmacists' professional growth (AACP, 2013).

Both women and men have career aspirations. Thus, equal opportunities for professional development, recognition, and empowerment should be a prerequisite for both women and men in such programmes (Bhalalusesa, 1998).

According to United Nations data, women account for 70% of health and social care workers and are at the front line of the fight against COVID-19 (UN-SGDs, 2019). However, they are less likely to be in leadership positions. Despite the improvements in women's leadership, it is far from reaching full gender equality (UN-SGDs, 2019). It is well known that, in career advancement, the percentage of men is higher than that of women in medicine, research, and health (Wozniak *et al.*, 2020). Moreover, women receive less mentoring and, thus, are less likely to be involved in senior roles (Wozniak *et al.*, 2020). Women are underrepresented in major roles and get paid less (Wozniak *et al.*, 2020). For example, the gender pay gap in Australia was stated to be 15–20% (Wozniak *et al.*, 2020). In Europe, the gender pay gap was 14.1% in 2019 (European Commission, 2021). Women earn 16% less than men in the USA in 2020 (Barroso & Brown, 2021). Thus, all these factors highlight the need for women's

professional development, recognition, and empowerment in science and education.

It is clear that women need professional development programmes during their careers. Such programmes will support increased representation of women in senior positions. Women will feel empowered with improved professional self-worth, which, in turn, will bring job satisfaction and motivation. Employers and policy makers should make professional development procedures and opportunities equal for all within universities and pharmaceutical science organisations. Professionals should seek equal access to education, specialisations, and career development.

#### **Factor 5. Women in leadership**

Despite their presence in the labour force, women are often underrepresented in leadership positions. Women in health professions, specifically in the pharmaceutical workforce, are lagging behind their male counterparts when pursuing advancement into leadership roles. Such roles include becoming deans of pharmacy schools, managers or owners of community pharmacies, managers or directors of hospital pharmacy departments, and presidents of professional organisations, and having senior positions pharmaceutical, regulatory, and governmental institutions (Martin *et al.*, 2021).

Women will represent over 72% of pharmacy school graduates in 2023; therefore, the pharmacy profession may be construed as a female-dominated profession (Martin *et al.*, 2021; Chisholm-Burns *et al.*, 2017; FIP, 2018). In higher education, despite having predominantly females working in academia, gender disparities in leadership positions remain, with women constituting a substantial portion of entry-level positions (e.g., assistant professor) while being inadequately represented in senior-level positions (e.g., only 26% of deans, 30% of full professors, 31% of department chairs) (Martin *et al.*, 2021; Chisholm-Burns *et al.*, 2017; FIP, 2018). Beyond the academic setting, women comprise over 80% of the labour force in the healthcare sector. However, their presence in the workforce is not equivalent to their representation in top-level positions (Chisholm-Burns *et al.*, 2017). In 2018, women in the UK represented 61% of the workforce across various pharmacy-related sectors while occupying only 36% of senior leadership positions (Naylor, 2018). Similarly, only 30% of pharmacy owners in Canada were women in 2019, despite 70% of pharmacists being women (Canadian Pharmacists Association, 2019). In the USA, none of the chief executive officers (CEOs) of retail chain pharmacies are women, and only 36% of large national pharmacy and drug associations have women CEOs (Karlovitich, 2020).

The gap also exists in academia, where there are 143 pharmacy schools, including only 25 women deans in 2019 (Karlovitich, 2020). In Australia, gender balance in pharmacy organisations has improved over the last two decades, but there is still a small number of women in leadership positions, notably at the highest levels, where women held just 24% of president/chair (Martin *et al.*, 2021) in 21-year period. Despite accounting for 62% of pharmacists in Australia, women held 34% of these roles in 2018 (Martin *et al.*, 2021).

Despite women comprising a majority of the labour force and earning higher educational degrees, gender disparities in leadership roles remain observable across different sectors of the pharmaceutical workforce (WHO, 2019). For this reason, there is a need to better address gender distribution in the workforce and to understand the challenges and enablers for women in science and education as they thrive for career advancement into leadership roles.

With FIP envisioning that 72% of pharmacists in 2030 will be female, the representation of women in leadership roles will become increasingly pivotal for the pharmacy profession (FIP, 2018). Strategies to address the numerous hurdles women in science and education must overcome require a comprehensive framework to facilitate a positive work culture. In addition to promoting gender diversity in leadership, working in an environment that offers a positive and supportive culture is associated with increased job satisfaction and an unwavering commitment to the organisation (Westring *et al.*, 2016). Prior studies suggest that diversity in leadership positions demonstrated substantial benefits, such as increased profitability, higher ability to contribute to new innovative ideas and perceived value from consumers and stakeholders (Martin *et al.*, 2021).

#### **Quotes from case studies for the factors associated with PPEs for women in science and education**

Contributors from different countries and sectors shared case studies for each of the factors discussed above. Quotes from case studies were extracted and shown in Table I. For more information on the case studies, the FIPWiSE toolkit for positive practice environments for women in science and education can be visited (FIPWiSE Toolkit, 2021).

For example, the quote “Organisations should have a clear policy and range of internal courses that support the development of all groups of the workforce.” highlighted the need for policymaking and continuing

professional education for the development of women in science and education. Another quote for work-life balance was: "Family care leave is available to all

regardless of whether they have children or not," so that individuals who have caring responsibilities for elders must have equal opportunity for leave.

**Table I: Quotes from the case study authors**

Factors	Case study authors	Quotes
Factor 2. Work-life balance	Not disclosed	<i>"Allocation of opportunities and positions should be based on qualifications and never on gender."</i>
Factor 2. Work-life balance	Ning Wei Tracy Chean & Wing Lam Chung	<i>"Family care leave is available to all regardless of whether they have children or not."</i>
Factor 2. Work-life balance	Ning Wei Tracy Chean & Wing Lam Chung	<i>"Pharmacy outlets with different hours makes (pharmacists') life better."</i>
Factor 2. Work-life balance	Ecehan Balta	<i>"Contrary to all sectors, the health sector did not stop, the working hours were incredibly long. The absence of another adult caring for the children during this time caused serious problems."</i>
Factor 3. Creating supportive and safe working environments	Ning Wei Tracy Chean & Wing Lam Chung	<i>"HR shares with staff various courses on mental wellness, mindfulness and building resilience during the pandemic."</i>
Factor 3. Creating supportive and safe working environments	Ecehan Balta	<i>"Although there is not a serious and systemic discrimination against women, no positive discrimination measures have been taken so far."</i>
Factor 3. Creating supportive and safe working environments	Ecehan Balta	<i>"Violence and harassment in working life should also be seen as a health problem of employees and should be made a part of the work of the Occupational Health and Safety Board."</i>
Factor 4. Opportunities for professional development, recognition and empowerment	Lynette R. Bradley-Baker & Lucinda L. Maine	<i>"Better enforcement can make a significant difference on addressing inequities."</i>
Factor 4. Opportunities for professional development, recognition and empowerment	Lynette R. Bradley-Baker & Lucinda L. Maine	<i>"One transparent system for professional development, recognition and empowerment should be communicated to staff and spelled out in human resources policies and procedures manuals."</i>
Factor 4. Opportunities for professional development, recognition and empowerment	Audrey Clarissa	<i>"Women should not look down on themselves. They should be confident that they can contribute significantly at their workplaces."</i>
Factor 4. Opportunities for professional development, recognition and empowerment	Lawrencia Louise Brown	<i>"Organisations should have a clear policy and range of internal courses that support the development of all groups of the workforce."</i>
Factor 5. Women in leadership	Chinedum Peace Babalola	<i>"A place in the university for nursing mothers can keep their babies with their caregivers while at work. This enables them to breast feed the babies as needed."</i>
Factor 5. Women in leadership	Dalal Hammoudi Halat	<i>"A health committee including female scientists/ academics/practitioners can disseminate science, raise knowledge, and debunk falsified information on COVID-19."</i>
Factor 5. Women in leadership	Christine Ching Benosa	<i>"There is a regular gender awareness training conducted among students and employees where everyone, both men and women are trained to be more sensitive and responsive regarding the issue of gender equality."</i>
Factor 5. Women in leadership	Dalal Hammoudi Halat	<i>"Women's career aspirations are affected by traditions, being forced to choose between family and career."</i>

### Suggestions and/or solutions to establish PPEs in the workplaces for women in science and education

The five defined factors for PPEs provide suggested solutions for each factor from the perspective of employers and managers (e.g., those in academic and

research institutions, the pharmaceutical industry, and other science and education workplaces) and professionals in pharmaceutical sciences and pharmacy education and policy makers (e.g., those in governments and regional or national pharmaceutical organisations). Those factors are displayed in Table II. For more information on the case studies, the FIPWiSE

toolkit for positive practice environments for women in science and education can be visited (FIPWiSE Toolkit, 2021).

One example of supporting women in leadership is how managers can provide opportunities for early

leadership engagement and access to leadership resources. While professionals can hold a leadership role or become a mentor, policy makers can develop policies and regulatory frameworks for ensuring gender-balanced leadership teams at workplaces, such as introducing quotas.

**Table II: Solutions from the perspective of employers/managers, professionals and policy makers**

Factors	Employers and managers	Professionals in pharmaceutical sciences and pharmacy education	Policy makers
<b>Factor 1. Equal incentives for equal work</b>	<ul style="list-style-type: none"> <li>• Commit to provision of equal opportunity and fair treatment regardless of gender.</li> <li>• Ensure human resources planning and management for equal provision of recruitment, payment and incentives.</li> </ul>	<ul style="list-style-type: none"> <li>• Consider proactively starting an equity department at your workplace, in collaboration with human resources and relevant decision makers.</li> <li>• Consider speaking up to relevant structures and line managers when observing an inequity issue on incentives and payment.</li> </ul>	<ul style="list-style-type: none"> <li>• Raise awareness about the urgency of the pay and incentives gap.</li> <li>• Develop policies and regulatory frameworks for implementing evidence-based incentive systems, fair pay and transparency policies.</li> </ul>
<b>Factor 2. Work-life balance</b>	<ul style="list-style-type: none"> <li>• Promote healthy work-life balance through policies and programmes that support fair and manageable workloads and flexible work arrangements, and alleviate job demands and stresses.</li> <li>• Implement policies to protect pregnant women against discrimination, and provide maternity, paternity and special leave.</li> </ul>	<ul style="list-style-type: none"> <li>• Self-assess your motivation, satisfaction and performance regularly.</li> <li>• Prioritise and distribute your time wisely between work and daily life activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop policies and regulatory frameworks to support employees with establishing a fair balance between working hours and personal time.</li> <li>• Establish family-friendly policies considering different roles of individuals, such as being a professional and caregiver at the same time.</li> </ul>
<b>Factor 3. Creating safe and supportive working environment</b>	<ul style="list-style-type: none"> <li>• Keep employees safe and secure so they remain healthy, motivated and productive.</li> <li>• Involve employees in planning, governance and decision-making affecting their practice and work environment.</li> <li>• Provide access to mental well-being and social support services and tools.</li> </ul>	<ul style="list-style-type: none"> <li>• Make sure you recognise issues such as bullying or harassment or symptoms of stress, find out about steps to cope, and know where to go if you need help.</li> <li>• Request assurance of privacy and confidentiality as an employee when seeking help or reporting issues such as bullying or harassment.</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitate research on PPE issues, such as bullying and harassment, in order to provide evidence-based recommendations on interventions.</li> <li>• Develop policies and regulatory frameworks that ensure safe working conditions.</li> </ul>
<b>Factor 4. Opportunities for professional development, recognition and empowerment</b>	<ul style="list-style-type: none"> <li>• Provide opportunities for professional training, development and career advancement, such as mentorship programmes for women at all levels of their career.</li> <li>• Celebrate successes and share good practices internally and externally to boost employee confidence and encourage others in the workplace.</li> <li>• Provide adequate and timely compensation commensurate with education, experience and professional responsibilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Be motivated, volunteer for and proactively request activities for professional development, recognition and empowerment.</li> <li>• Request high quality, reliable, relevant and up-to-date evidence.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop policies for career development and advancement.</li> </ul>
<b>Factor 5. Women in leadership</b>	<ul style="list-style-type: none"> <li>• Provide opportunities for early leadership engagement and access to leadership resources.</li> <li>• Empower and support women in science and education to pursue leadership roles.</li> </ul>	<ul style="list-style-type: none"> <li>• If you hold a leadership role, become a mentor, sponsor or role model to women in science and education to provide guidance, and to promote or advocate for these individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Raise awareness about the urgency to address the leadership gap.</li> <li>• Develop policies and regulatory frameworks for ensuring gender-balanced leadership teams at workplaces, such as introducing quotas.</li> </ul>

## Conclusion

Despite the many inequalities and inequities for women in science and education, they can be overcome by appropriate solutions. Individuals, employers, and institutions have shared responsibility for supporting and enabling women across all stages of their careers and all areas and sectors of science and education. The FIPWiSE toolkit for PPEs for women in science and education addressed the issue comprehensively, provided real-life examples through case studies and good practice examples, and raised awareness about PPEs while delving deeper into the five identified key factors associated with it.

## Acknowledgements

The authors would like to thank all case study authors and contributors, in alphabetical order, Ajeng Diantini, Esther Anyango, Audrey Clarissa, Chinedum Peace Babalola, Christine Ching Benosa, Lawrence Louise Brown, Lynette R. Bradley-Baker, Lucinda L. Maine, Ning Wei Tracy Chean and Wing Lam Chung for their collaboration and generosity in contributing to the toolkit.

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