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Gender Disparities in Cambodian Higher Education (2015 – 2020): A Mixed-Methods Analysis of Enrollment, Performance, and Policy

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ABSTRACT

This study examines gender disparities in Cambodian higher education from 2015 to 2020, focusing on both enrollment patterns and academic performance across degree levels. The research aims to assess the effectiveness of national policies in promoting gender equity and to identify structural barriers limiting female participation, especially at graduate levels. A mixed-methods approach was employed, combining qualitative policy analysis with quantitative statistical techniques, including descriptive statistics and independent sample t-tests. Data were sourced from official reports issued by the Ministry of Education, Youth and Sport, and international organizations such as UNESCO and the World Bank. Findings reveal that while gender parity has been nearly achieved at the associate and bachelor's levels, women remain significantly underrepresented in master's and PhD programs. T-test results show no significant performance differences at undergraduate levels, but statistically significant disparities favoring male students were observed at graduate levels. Despite the implementation of gender-focused policies, systemic barriers, including financial constraints and lack of institutional support, continue to affect women's access to advanced education. This study fills a critical gap in the literature by offering a longitudinal and policy-informed perspective on gender equity in Cambodian higher education.

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1. INTRODUCTION

Education is the basis of a functional society. Education enables individuals to live happily in a community while also participating politically and economically. Investing in education benefits individuals, nations, and the world as a whole [1]. Individual education will boost employability, raise earnings, and promote a healthy lifestyle. Advanced nations, such as Japan, the United States, and Singapore, which invest extensively in elementary, secondary, and higher education, have been able to contribute to scientific discovery,

knowledge, and the development of new goods and technology. Globally, investment in education promotes social cohesiveness, economic prosperity, competitiveness, and innovation [1].

Since the 1990s, one of the main engines of development in developing nations has been thought to be higher education [2]. Expansion of higher education has been shown in several studies, such as McMahon [3], to have a positive effect on economic growth. According to McMahon [3], research and development, which are mostly conducted in higher education institutions, have an indirect impact on economic growth that should be recognized. While focusing mostly on data from OECD nations, the author clarifies that the employment of graduates from higher education serves as a primary means of disseminating new ideas to business [3].

Despite the numerous benefits of higher education, these benefits are not shared equally. While higher education is widely recognized as a key driver of development, access remains unequal, particularly in developing nations like Cambodia, where structural barriers disproportionately affect marginalized groups, including women and rural populations. Additionally, while investments in higher education contribute to economic prosperity, the effectiveness of such investments varies, raising questions about the optimal allocation of resources and whether all individuals benefit equally. Moreover, gender disparities persist in enrollment.

1.2 Research Objectives

a. To evaluate the effectiveness of existing policies and investment strategies in higher education and whether they equitably benefit all individuals.
b. To examine gender disparities in higher education enrollment, identify key factors that contribute to unequal participation, and propose strategies for improvement.

1.3 Research Question

a. How effective are current policies in ensuring equitable access to higher education in Cambodia?
b. What are the key factors contributing to gender disparities in higher education enrollment, and what strategies could improve gender equity in participation?

1.4 Significance of the study

This study is significant as it provides valuable insights into the effectiveness of Policy Improvements. By evaluating the effectiveness of existing policies, the study provides informed, evidence-based recommendations to create a more equitable higher education system. Enhanced Accessibility. Identifying structural barriers that may lead to targeted interventions, making higher education more accessible for marginalized groups. Gender Equity Advancement. Understanding gender disparities can guide institutions and policymakers in designing initiatives that promote more balanced enrollment.

1.5 Literature Review

Higher education is recognized as a rich cultural and scientific asset that enables individual development and promotes economic benefits, technological and social changes. Higher education encourages knowledge sharing, creativity, research, and development, while it gives students the tools they need to adapt in a rapidly changing world. For many students who find themselves in a precarious situation, it served as a passport to stability and financial security [4].

World Declaration defined higher education as ***"all types of studies, training for research at the post-secondary level, provided by universities or other educational institutions that are approved as institutions of higher education by the competent state authorities".*** This definition was defined in the World Conference on Higher Education in 1998. This basic concept is used by UNESCO, the World Bank, UNDP, and other organizations [5].

According to Tuy [6], young women in Cambodia encounter barriers to higher education. Social standards, financial restraints, and other issues are the primary causes of women's limited options to seek higher education. The elder generation in Cambodia still adheres to traditional social conventions, and they frequently believe that women do not have to pursue higher education because a woman's duty after marriage is to be a housewife. Another barrier to women's access to higher education is that they frequently face financial challenges in funding their studies [6].

In addition, according to Chea and Shumow [7], Academic success was found to be significantly influenced by individual student characteristics, including regular attendance, academic devotion, and efficient study practices. These distinct elements were, nonetheless, closely related to peer, family, and cultural influences. Notably, pupils with bad study habits and behavioral problems frequently hailed from low-income families with little parental supervision, giving kids more freedom and autonomy.

Household duties hindered students' academic involvement, leading to poor performance, while financial limitations and a lack of emotional support in low-income homes contributed to absenteeism and a lack of commitment among students. Moreover, these difficulties were made worse by deficiencies in the way education was delivered and the assistance provided for extracurricular activities in school environments [8].

1.6 Research Gap

While existing studies have identified key barriers that hinder women's access to higher education in Cambodia, such as social norms, financial constraints, and household responsibilities [6], much of this research focuses on the general challenges without providing a longitudinal or systemic analysis of gender disparities in higher education participation over time. Additionally, although Chea and Shumow [7] have highlighted how socio-economic and familial factors affect students' academic performance and engagement, their findings are primarily centered on individual and behavioral aspects rather than structural gender inequalities within higher education institutions.

There is a noticeable lack of empirical research that examines how gender dynamics in Cambodian higher education have evolved over a defined period, particularly in response

to policy changes, economic development, and educational reforms. Moreover, previous studies tend to treat gender as a secondary variable rather than as a central focus of analysis. As a result, little is known about the trends, patterns, and institutional responses to gender disparities in Cambodian higher education from 2015 to 2020. This study seeks to fill this gap by conducting a gender-focused analysis of Cambodian higher education during this critical five-year period. It aims to assess how gender has influenced access, participation, and academic outcomes, and to explore the extent to which national policies and institutional practices have addressed or perpetuated gender inequalities.

1.7 Overview of Cambodian Higher Education

The present system of Cambodian higher education began when the country founded its first National Law, National Institute of Politics, and National Institute of Economic Sciences in 1947, just a few years before the end of nearly one century of French colonial rule in Cambodia. The French suzerain state's system of higher education had a significant impact on these institutions in Cambodia.

The Khmer Royal University was founded in Phnom Penh in 1960 and was the first establishment that could be recognized as a university in the Western sense. After that, there was a quick period of growth. Six universities were established in 1965: the People's University, the Royal Technical University, the Royal University of Fine Arts, the Royal University of Kompong Cham, the Royal University of Takeo-Kampot, and the Royal University of Agricultural Science [9]. The number of students enrolled in higher education by 1966 was 7,360 [9]. However, the education offered by these universities during that time was of incredibly poor quality [10].

The government of Cambodia and relevant parties have worked to improve the country's educational system. There have also been notable advancements in higher education, notably in terms of institutional growth and accessibility [11]. While there is still worry about the quality of higher education, significant advancements have been noted [11]. For example, there have been advancements in curriculum administration, student assessment, and access to higher education [12]. In an effort to enhance the subsector, new projects and initiatives have also been launched. Additionally, new academic publications and research conferences have been established to support research in Cambodian higher education [11].

Presently, across 20 provinces and the capital, there are 128 higher education institutions in the country, 48 of which are public and 80 of which are private. Sixteen ministries and institutions are in charge of higher education establishments. The Ministry of Education, Youth, and Sport oversaw 80 higher education institutions, 13 of which were public and 67 of which were private. Postgraduate education services were offered by 45 higher education institutions, of which 21 offered doctorate-level instruction [12].

In Cambodia, the higher education system mainly consists of universities, institutes, technical institutes, and the Royal Academy. These institutions offer associate degrees, bachelor's degrees, master's degrees, and doctorates of philosophy degrees [13]. Though there have been long-term, intentional governmental interventions, higher education has expanded rapidly, but in an unplanned and uncoordinated manner. Higher education in

Cambodia is supplied by a number of ministries and institutes, making coordination of government entities problematic in terms of quality control, administrative overlap, and information exchange [13].

Regarding the public spending on education based on the Incheon Declaration on Education 2030 Framework for Action, which was adopted by 184 member states, Government expenditure on education as a percentage of gross domestic product (GDP) should be (at 4% to 6% of GDP) [14]. However, from 2015 to 2020, the Cambodian government on average spent 2.31% of GDP on education. Public spending on education in Cambodia hit an all-time high in 2020, which was 3% of GDP, but the number decreased significantly after that due to the impact of COVID-19. While Thailand on average spent 3.43% of GDP and Thailand public spending on education recorded all-time high in 2000 which was 5.3% of GDP and Vietnam on average spent 3.32% of GDP on education and Vietnam recorded an all-time high spending on education was in 2008 which was 4.9% of GDP from 2015 to 2020. According to the above data, the Cambodian government spent less than Thailand and Vietnam, at around more than 1% of GDP. Government expenditure on education, total (% of GDP) is determined by dividing total government expenditure for all levels of education by GDP and multiplying by 100 [15].

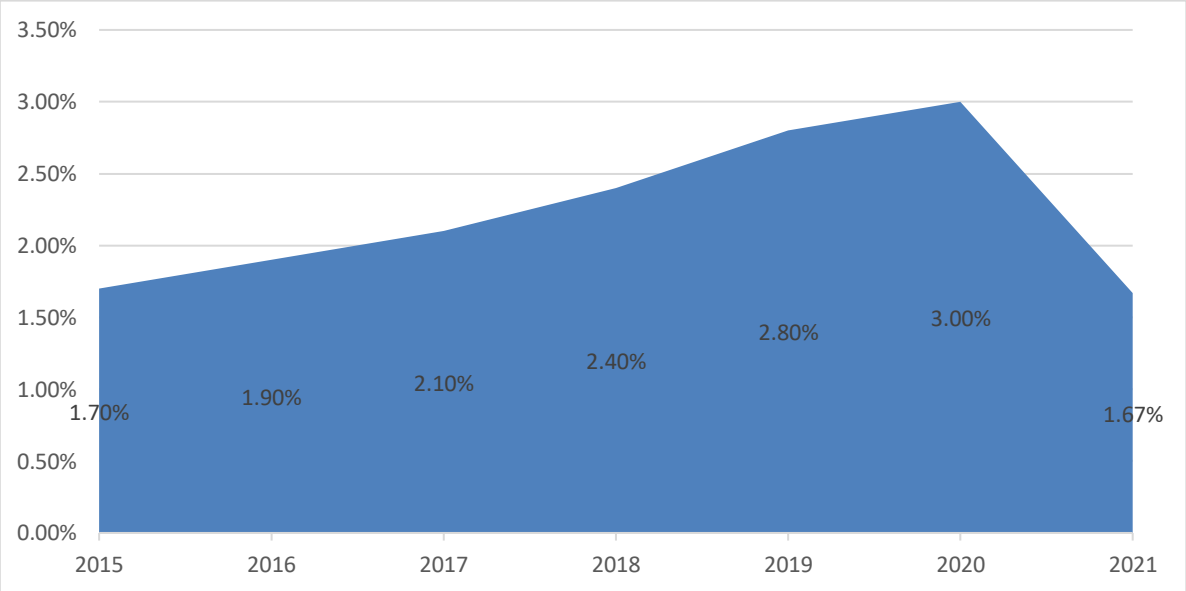

Figure 1. Cambodia Government Education Expenditure: Total: Percentage of GDP
Source: from World Bank [15]

As of 2020, Cambodia has 128 higher education institutions scattered throughout 20 provinces and the capital, of which 48 are state and 80 are private. Higher education institutes are under the control of sixteen ministries and institutions. The Ministry of Education, Youth, and Sport controls eighty higher education institutions, of which thirteen are public and the remaining sixty-seven are private [12].

Figure 2 shows the number of higher education institutions in Cambodia from 2015 to 2020. Public higher education remains at 48, the same from 2015 to 2020; however, private higher education has increased from 73 in 2015 to 80 in 2020 [12].

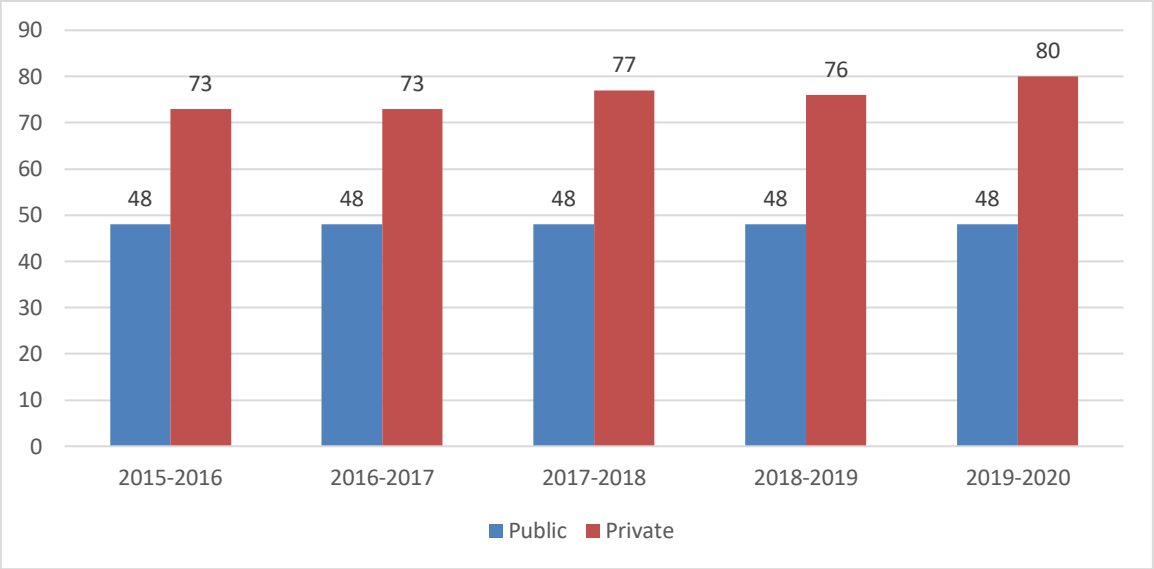

Figure 2: Number of Higher Education Institutes in Cambodia from 2015 to 2020
Source: from MoEYS [12]

Table 1. Higher Education Under the Control of Ministries and Institutions.

No	Ministries and Institutions in Charge	State	Private	Total
1	Ministry of Education, Youth and Sport	13	67	80
2	Ministry of Labor and Vocational Training	12	13	25
3	Ministry of National Defense	5	0	5
4	Ministry of Agriculture, Forestry and Fisheries	3	0	3
5	Ministry of Culture and Religion	3	0	3
6	Ministry of Health	2	0	2
7	Ministry of Economy and Finance	1	0	1
8	Office of the Council of Ministers	1	0	1
9	Ministry of Interior	1	0	1
10	Ministry of Land Management, Urban Planning and Construction	1	0	1
11	National Bank of Cambodia	1	0	1
12	Ministry of Social Affairs, Veterans and Youth Rehabilitation	1	0	1
13	Ministry of Mines and Energy	1	0	1
14	Ministry of Posts and Telecommunications	1	0	1
15	Ministry of Culture and Fine Arts	1	0	1
16	Ministry of Public Works and Transport	1	0	1
	Total	48	80	128

Source: from MoEYS [12]

Table 1 shows the number of higher education institutions under the control of relevant ministries and institutions. Among 128 higher education institutes in Cambodia, 48, or equivalent to 37.5 %, are public and 80, equivalent to 62.5 %, are privately owned. Among 128 higher institutions, 80 were under the control of the Ministry of Education, Youth and Sport, 25 managed by Ministry of Labor and Vocational Training, 5 control by the Ministry of National Defense, and the Ministry of Culture and Religion and the Ministry of Agriculture, Forestry and Fisheries each managed 3 institutions. Ministry of Health control

2. At the same time, the rest are under the control of the Ministry of Urban Planning and Construction, Ministry of Interior, Office of the Council of Ministers, Ministry of Public Works and Transport, National Bank of Cambodia, Ministry of Mines and Energy, Ministry of Posts and Telecommunications, Ministry of Economy and Finance, Ministry of Land Management, Ministry of Social Affairs, Veterans and Youth Rehabilitation [12].

Currently, there are 23 dorms with 1,480 female students, with 7 operated by private higher education institutions and 275 female students residing. The dormitory housed 802 Khmer and international scholarship students, 606 of whom were female, accounting for 75.56%. Cambodia's gross enrollment ratio in higher education is 12.0% (12.2% male, 11.8% female) in 2019-2020 [16]. To determine the gross enrollment ratio for higher education, divide the number of students enrolled in higher education regardless of age by the population of the age group that officially corresponds to higher education and multiply by 100 [17].

2. METHOD

This research carried out methodical desk research to gather official data, technical reports, and current strategic documents from the Cambodian government and INGO, including **Education Congress: The Education, Youth, and Sports Performance in the Academic Year 2019-2020.** The validity of the analytical investigation was enhanced, and this collection technique guaranteed the quality of the data. Hence, there were datasets and documents collected from the Ministry of Education, Youth and Sport (MoEYS), UNDP, UNESCO, and the World Bank Group that were used to analyze Cambodian government policies on higher education and the gender situation in higher education.

Mixed research methods were used in this study. Qualitative methods were used to analyze the Cambodian government's policies toward higher education, and quantitative methods were adopted to analyze the gender situation in higher education. An analysis was conducted on government policies and gender in higher education.

A frequency distribution and descriptive statistics were employed in this research. The frequency distribution displays the many measurement categories, as well as the number of observations in each [18]. It can be in the form of frequency tables, bar charts, and histograms. This section produces the results of the characteristics of the dataset. In addition, an independent T-test was adopted to test the difference between males and females studying in Cambodian higher education institutes and universities.

3. RESULTS AND DISCUSSION

3.1. Enabling Policies on Higher Education

In Cambodia, the Department of Higher Education in the Ministry of Education, Youth, and Sport (MoEYS) is responsible for developing the national policies on higher education. The current official documents defining the national higher education strategy and policies include: **1.** The Gender Mainstreaming Strategic Plan in Education, **2.** Policy on Higher Education Vision 2030, **3.** Cambodia’s Education 2030 Roadmap for Sustainable Development. **4.** Sub-decree No. 174 on the Provision of Scholarships to Students at Public Institutes was passed on May 5, 2014.

3.1.1 The Gender Mainstreaming Strategic Plan in Education

The Gender Mainstreaming Strategic Plan in Education 2016-2020 was implemented by the Ministry of Education, Youth, and Sport (MoEYS) in an effort to promote socially positive attitudes and boost women's participation in education service delivery. In promoting gender mainstreaming and empowering female in education at the national and sub-national levels, the Ministry of Education, Youth, and Sport has implemented action plans and practical measures through education program planning, service delivery, and management leadership in education to ensure that male and female have full and equal access to education [19].

3.1.2 Policy on Higher Education Vision 2030

The vision of this policy is to create a top-notch higher education system that produces human resources with superior knowledge, abilities, and moral principles so they can work and live in the knowledge-based and globalized world of today. Its goal is to develop a good governance system and higher education mechanisms that ensure qualified students, regardless of gender, have the chance to enroll in high-quality higher education programs that address the demands of the labor market and socio-economic development. This policy has the potential to support gender equality in higher education [20].

3.1.3 Cambodia's Education 2030 Roadmap for Sustainable Development

The Cambodian government has identified higher education as a critical tool for accomplishing its development goals [21]. Higher education is frequently referred to as the engine of development in the emerging information and knowledge-based economies. New kinds of economic production are becoming more reliant on knowledge and information technologies. The experience of certain East Asian nations demonstrates that huge investments in education, particularly higher education, contribute to rapid economic growth. Higher education is especially crucial as countries strive to modernize and diversify their economies and transition to a higher-value manufacturing model [22]. However, it is important to highlight that investing only in higher education is insufficient. As vital as higher education investment is, emphasis must be placed on its efficiency and effectiveness, which includes maintaining adequate links to the economy's labor market demands. In this context and in accordance with the spirit of Goal 4.3 of SDG 4-Education 2030, Cambodia intends to improve access to affordable and excellent higher education for both females and males [23].

3.1.4 Sub-Decree on Provision of Scholarship to Students in Public Institutes

Sub-decree No. 174 on the Provision of Scholarships to Students at Public Institutes was passed on May 5, 2014. The Sub-decree intends to provide scholarships and stipends to those students who have pursued their studies. The scholarship will be awarded to: i) outstanding students, ii) orphanage students, iii) indigenous students, and iv) students from low-income households. In general, 60% of scholarships are provided to outstanding students, 20% to female students, 15% to underprivileged students, and 5% to remote students [24].

These Policies contributed significantly to improving female enrollment in higher education. ***The Gender Mainstreaming Strategic Plan*** directly supports the goal of gender equality in higher education. By addressing the root causes of gender inequality, such as discriminatory attitudes and unequal access to resources, the plan contributes to creating a more equitable educational environment. ***Policy on Higher Education Vision 2030***: This policy emphasizes inclusivity by ensuring that all qualified students, regardless of gender, have access to high-quality education. By aiming for a governance system that supports equal opportunities, the policy addresses the structural barriers that women often face in accessing higher education. ***Cambodia's Education 2030 Roadmap***: This roadmap explicitly mentions the need to increase access to affordable and quality higher education for both males and females. The focus on gender equality within the framework of SDG 4 ensures that women are prioritized in efforts to expand access to education. ***Sub-Decree on Provision of Scholarship to Students in Public Institutes:*** This sub-decree directly targets female students by allocating 20% of scholarships to them. By providing financial support specifically for female students, the policy addresses one of the key barriers to higher education for women: financial constraints. This direct allocation helps to increase female enrollment by ensuring that more women have the means to pursue higher education.

These policies align well with the focus on gender equality in higher education. Impact on Gender Equality: The combination of policies that address both access and financial support has likely contributed to improving gender equality in higher education. By ensuring that governance mechanisms promote inclusivity and that financial barriers are reduced for female students, these policies are designed to create a more level playing field in higher education. **Outcomes of these policies from (2015-2020)**: These policies suggest a positive trend. The allocation of scholarships specifically for female students and the emphasis on inclusive governance indicate that there has likely been some improvement in female enrollment and completion rates in higher education in the last five years. However, the effectiveness would also depend on the implementation and monitoring mechanisms in place, which would require further investigation.

Effectiveness: The policies seem well-designed to address key barriers to female enrollment in higher education, such as financial constraints and structural inequalities. The inclusion of specific quotas for female students in scholarship programs is a particularly effective strategy, as it directly tackles one of the most significant barriers to higher education for females.

Timeliness: Given Cambodia's development goals and the global push for gender equality in education under the SDGs, these policies are timely. They are aligned with both national development goals and international commitments, which adds to their relevance and potential for impact.

3.2. The Current Situation of Gender in Cambodian Higher Education

Figure 3 shows the number of male and female students studying associate degrees from 2015 to 2020. In 2015-2016, the number of students studying for associate degrees was 23,746, and there were 11384, among them female students, equivalent to 47.94 %. In 2016-2017, students studying for associate degrees were 20,570, and 10,505 of them were female,

equal to 51.07 %. In 2017-2018, the number of students studying for associate degrees was 19,871, and 9,807 were female, accounting for 49.35 %. In 2018-2019, the number of students studying for associate degrees was 19,575, and 10,291 of them were female, which is equivalent to 52.57 %. In 2019-2020, the number of students studying for associate degrees was 19,782, and 10,239 of them were female, which is equal to 51.76 %.

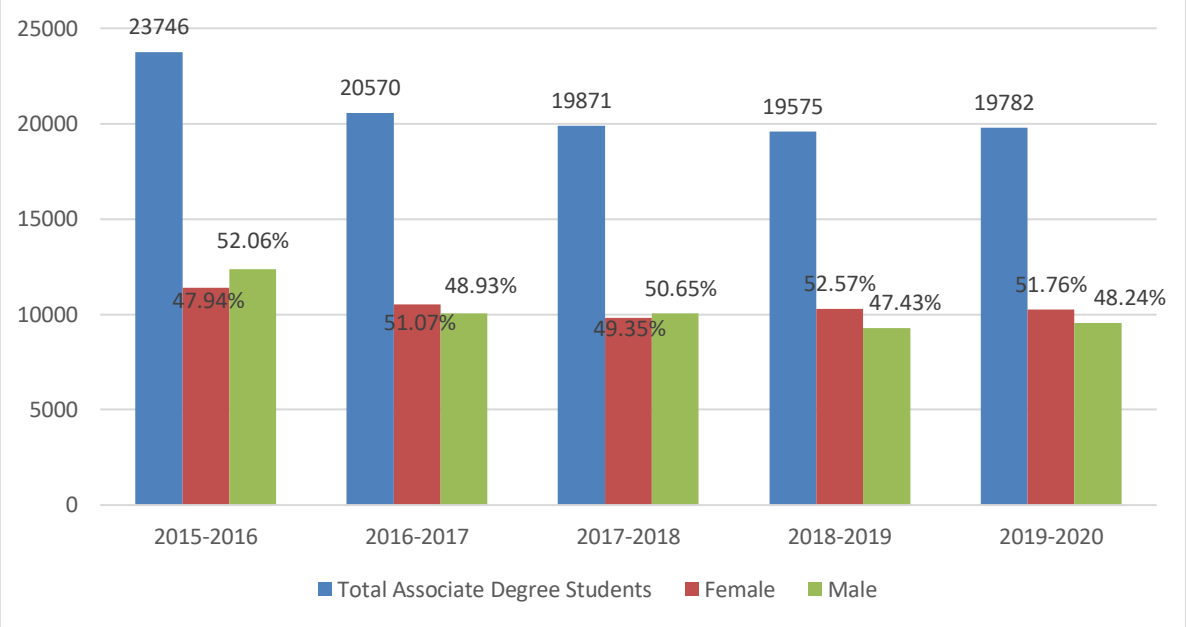

Figure 3. Number of Male and Female Study Associate Degree Students from 2015 to 2020
Source: from MoEYS [19]

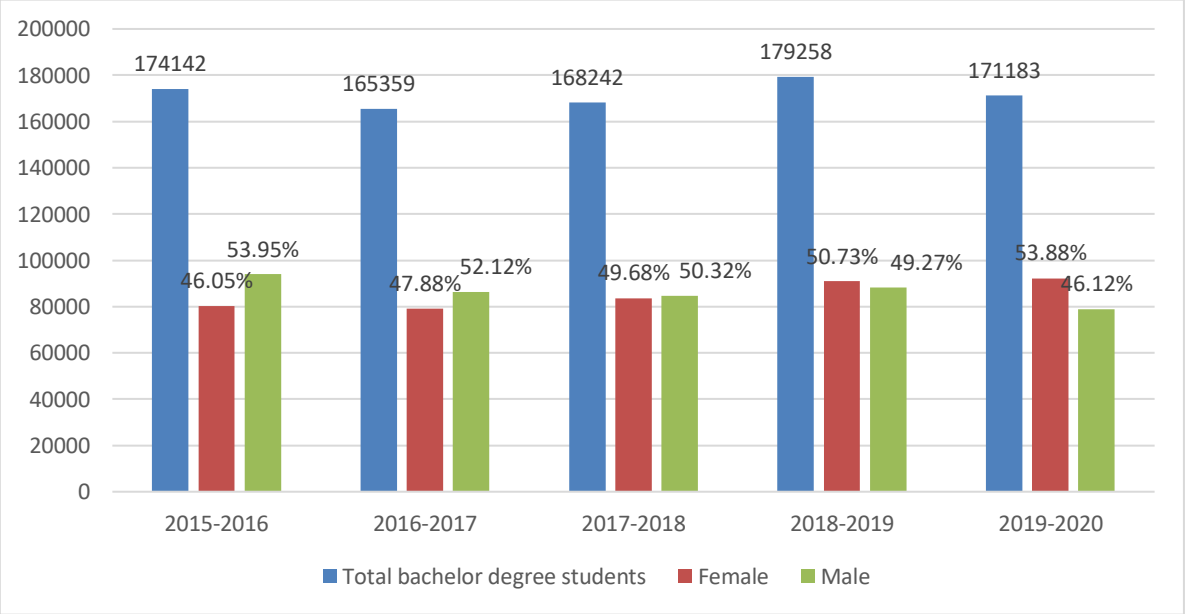

Figure 4. Number of Male and Female Students Pursuing Bachelor's Degrees from 2015 to 2020
Source: from MoEYS [16]

Figure 4 shows the number of male and female students studying bachelor's degrees from 2015 to 2020. In 2015-2016, the number of students studying for bachelor's degrees was 174,142, and 80,193, among them were female students, equivalent to 46.05 %. In 2016-2017, students studying for a bachelor's degree were 165,359 and 79,172, among them were females equal to 47.88 %. In 2017-2018, students studying for a bachelor's degree were 168,242, and 83,585 were female, which accounted for 49.68 %. In 2018-2019, the number of students studying for a bachelor's degree was 179,258, and 90,933 were female, equivalent to 50.73 %. In 2019-2020, 171,183 students were studying for a bachelor's degree, and 92,237 were female, equal to 53.88 %.

Figure 5 shows the number of male and female students studying master's degrees from 2015 to 2020. In 2015-2016, the number of students studying for a master's degree was 18,723, and 4,077 were female, which is 21.78 %. In 2016-2017, 20,272 students were studying for a master's degree, and 4,503 were female, equivalent to 22.21 %. In 2017-2018, 22,022 students were studying for a master's degree, and among them, 5,160, equal to 23.43 %. In 2018-2019, students studying for master's degrees, 23,256 and 5,670 were female, accounting for 24.38%. In 2019-2020, 9,984 students were studying for a master's degree, and 3,035 were female, equivalent to 30.40%.

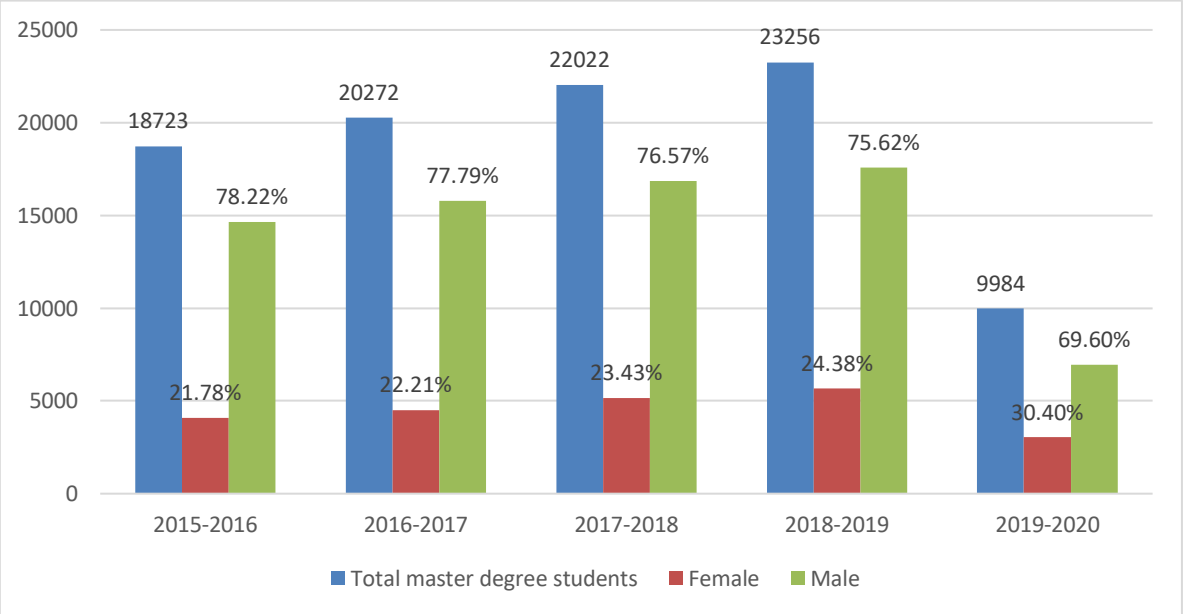

Figure 5. Number of Male and Female Master's Degree Students from 2015-2020
Source: from MoEYS [16]

Figure 6 shows the number of male and female students studying for a PhD degree from 2015 to 2020. In 2015-2016, students studying for a PhD were 1,229, and 63 were female, equal to 5.13 %. In 2016-2017, students studying for a PhD were 1,222, and 63 were female, which accounted for 5.16 %. In 2017-2018, there were 1,349 PhD students and 78 were of which were female, equal to 5.78 %. In 2018-2019, students studying for a PhD were 790, and 58 were female, equivalent to 7.34 %. In 2019-2020, students studying for a PhD were 961, and 88 were female, equal to 9.16 %.

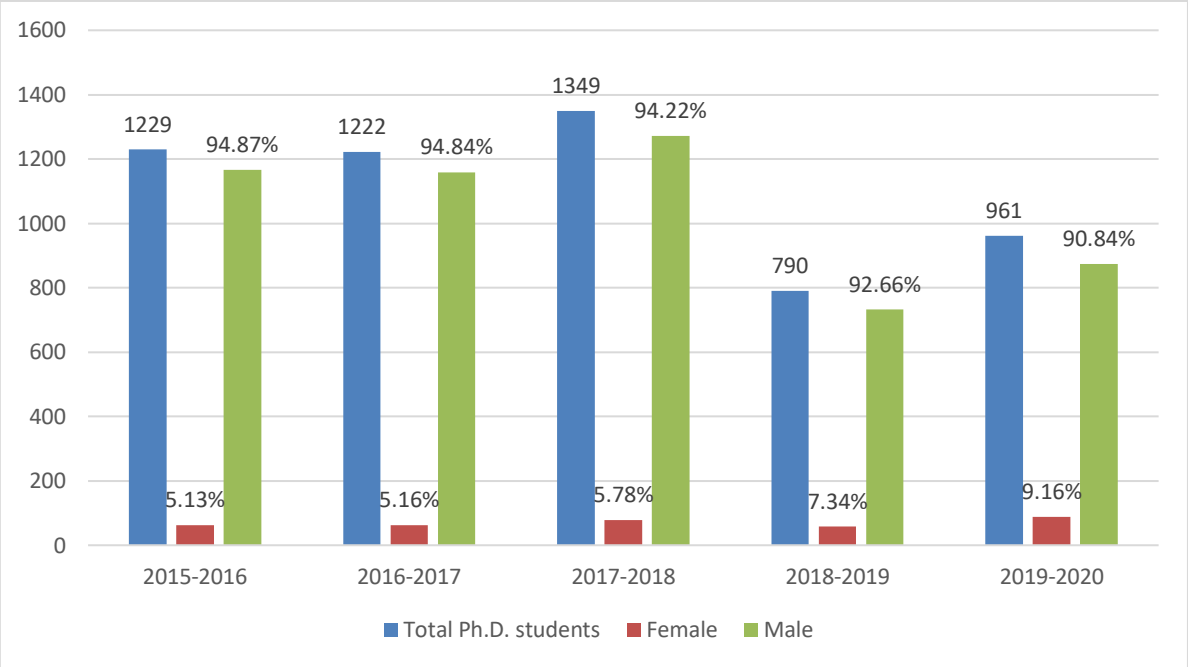

Figure 6. Number of Male and Female PhD Students from 2015-2020
Source: from MoEYS [16]

Table 2 shows that the independent t-test reveals that there is no statistically significant difference between males and females. With a mean score of 10,263.60 (SD = 1220.80) for males and 10,445.20 (SD = 582.78) for females, the t-value of -0.30 is far below the critical value of 1.96, and the p-value of 0.77 is much greater than the significance level of 0.05. This indicates that, in the context of associate degree studies, gender does not play a significant role in determining academic outcomes. The results suggest that both male and female students perform similarly at the associate degree level, implying equitable academic experiences across genders. Meanwhile, Cohen's d = -0.19, which is a small and negative effect size, indicates that females had slightly higher numbers.

Table 2. T-test Results of Male and Female Study for Associate Degree From 2015-2020

Study for an associate's degree	Male		Female		*t-value*	p-value	Cohen's *d*
	M	*SD*	*M*	*SD*			
Gender test	10263.60	1220.80	10445.20	582.78	-.0.30	0.77	-0.19

Note: t≥1.96 = significant, p<0.05 = significant, SD= standard deviation

Based on Table 3 below, similarly, the independent t-test results for bachelor's degree students also show no statistically significant difference between males and females. Males had a mean score of 86,412.80 (SD = 5462.09), while females had a mean score of 85,224.00 (SD = 6049.77). The t-value of -0.33 and p-value of 0.75 further confirm that the gender difference in academic performance at the bachelor's degree level is not significant. This finding is consistent with the results for associate degrees, reinforcing the idea that

gender does not significantly influence academic success in undergraduate education. While Cohen's d = 0.21, which is considered a small effect size.

Table 3. T-test Results of Male and Female Study for Bachelor's Degree From 2015-2020

Study for a bachelor's degree	Male		Female		*t-value*	p-value	Cohen's *d*
	M	*SD*	*M*	*SD*			
Gender test	86,412.80	5462.09	85224.00	6049.77	-0.33	0.75	0.21

Note: t ≥ 1.96 = significant, p < 0.05 = significant, SD = standard deviation

Table 4 shows in contrast to the associate and bachelor's degrees, the independent t-test results for master's degree students show a statistically significant difference between males and females. Males had a mean score of 14,362.40 (SD = 4,291.18), while females had a significantly lower mean score of 4,489.00 (SD = 1016.00). The t-value of 5.01, which exceeds the critical value of 1.96, along with the p-value of 0.00 (less than 0.05), indicates that the difference in academic performance between male and female master's degree students is statistically significant. This suggests that male students may have outperformed female students during this period, or that other factors may be influencing these results, such as differences in enrollment numbers or fields of study. While Cohen's d = 3.17, which is an extremely large effect size. The gender gap in master's degree studies is not only statistically significant (p < 0.001) but also substantial in practice.

Table 4. T-test Results of Male and Female Study for Master's Degree From 2015-2020

Study for a Master's degree	Male		Female		*t-value*	p-value	Cohen's *d*
	M	*SD*	*M*	*SD*			
Gender test	14,362.40	4,291.18	4489.00	1016.00	5.01	0.00	3.17

Note: t ≥ 1.96 = significant, p < 0.05 = significant, SD = standard deviation

Table 5 shows that the independent t-test indicates that the most pronounced gender difference is observed at the PhD level. Male students had a mean score of 1,040.20 (SD = 227.10), whereas female students had a mean score of just 70.00 (SD = 12.55). The t-value of 9.54, with a p-value of 0.00, clearly demonstrates a statistically significant difference between male and female PhD students. This result raises important questions about the factors contributing to such inequality at the highest academic level. The significant difference may reflect issues related to gender representation, access to resources, or support systems that disproportionately affect female PhD students. While Cohen's d = 6.03, which is an extremely large effect size. This suggests a very substantial difference in the number of males vs. female students pursuing a PhD from 2015 to 2020.

Table 5. T-test Results of Male and Female Study for PhD Degree From 2015-2020

Study for a PhD degree	Male		Female		t-value	p-value	Cohen's *d*
	M	*SD*	*M*	*SD*			
Gender test	1,040.20	227.10	70	12.55	9.54	0.000	6.03

Note: $t \geq 1.96$ = significant, $p < 0.05$ = significant, SD = standard deviation

DISCUSSION

This study aimed to explore gender disparities in Cambodian higher education from 2015 to 2020 by examining trends in enrollment and academic performance across degree levels, as well as assessing the effectiveness of relevant government policies. The research process was guided by a mixed-methods approach, which combined both qualitative policy analysis and quantitative statistical techniques.

Data Collection and Processing:

To ensure data credibility and accuracy, the study employed systematic desk research. Relevant secondary data were collected from official government sources such as the Ministry of Education, Youth and Sport (MoEYS), along with technical reports and databases from reputable international organizations, including UNESCO, UNDP, and the World Bank. These sources provided comprehensive information on higher education institutions, gender enrollment ratios, academic performance statistics, and national education policies. The data were compiled and cleaned for consistency, ensuring that the figures represented the academic years from 2015 to 2020.

Qualitative Analysis:

A document review method was used to analyze national education policies related to gender equality, including the Gender Mainstreaming Strategic Plan in Education, Policy on Higher Education Vision 2030, the Cambodia Education Roadmap 2030, and the Sub-Decree on Scholarships for Students in Public Institutes. Each policy was examined to determine its objectives, scope, and potential impact on improving gender parity in higher education. The alignment of these policies with Sustainable Development Goal 4.3 on equitable access to higher education was also assessed.

Quantitative Analysis:

Descriptive statistics and frequency distribution were applied to enrollment data across associate, bachelor's, master's, and PhD programs to evaluate gender differences in academic participation and performance. Subsequently, independent samples t-tests were conducted to compare the academic performance of male and female students at each degree level. These tests provided statistical validation of whether the observed differences in enrollment and academic outcomes were significant. In addition, although the data covers the entire population, it does not control for key variables such as academic discipline, urban versus rural background, and institutional type, which may limit the precision of the findings.

Finding the Expected Results:

The findings largely aligned with the study's expectations based on preliminary literature, particularly the persistence of inequality at higher academic tiers. Policies aimed at promoting gender equality appeared to have made measurable impacts at the undergraduate level, but their effects were less visible in postgraduate education. This indicates potential gaps in implementation, accessibility, and institutional support mechanisms that should be addressed in future interventions.

Overall, the finding confirms that while significant progress has been made toward gender equality in Cambodian higher education, systemic barriers still limit women's advancement at the graduate level. The research process, from comprehensive data collection to rigorous policy analysis and statistical testing, ensured a robust understanding of both the achievements and ongoing challenges in fostering gender equity in Cambodia's higher education landscape.

4. CONCLUSION

This study examined gender disparities in Cambodian higher education from 2015 to 2020 using a mixed-methods approach. By analyzing population-level data in the context of higher education, this article provides one of the first comprehensive overviews in Cambodia, filling a significant gap in the current literature.

The findings indicate significant progress in female enrollment at the undergraduate level, with women achieving near parity with men in associate and bachelor's degree programs. Independent t-tests further confirmed no significant gender differences in academic outcomes at these levels. However, a stark contrast was observed at the graduate level. Women remain underrepresented in both master's and PhD programs, and statistically significant disparities in academic performance were found in favor of male students. Despite the Cambodian government's introduction of several gender-focused policies, structural and financial barriers persist, especially at higher academic levels.

4.1 Research Implications

These findings have important implications for education policy and gender equity advocacy. They suggest that while current policies are somewhat effective at promoting undergraduate gender parity, they fall short in supporting women's advancement in graduate studies. Therefore, this study calls for enhanced scholarship schemes, gender-sensitive policy implementation, and leadership development programs targeting female students. The results also underscore the need to strengthen institutional support systems and address structural gender bias within higher education frameworks.

4.2 Research Limitation

This study is limited in several ways. First, it relies heavily on secondary data and government reports, which may not fully capture the lived experiences and challenges faced by female students. Second, the analysis focused broadly on gender in higher education without disaggregating the data by field of study, where disparities, particularly in STEM, could be more pronounced. Third, the research did not explore intersectional factors such as

rural-urban location, ethnicity, or socio-economic status that may further influence gender disparities.

4.3 Future Research Directions and Public Contribution

Future research should incorporate qualitative methods and primary data collection to gain deeper insights into the barriers women face in pursuing graduate education. Studies focusing on specific disciplines, especially STEM and health sciences, would provide a clearer picture of gender inequality in various academic fields. Additionally, exploring the intersection of gender with other social determinants could yield more nuanced policy recommendations. This research contributes to the broader public understanding by highlighting the progress and ongoing challenges related to gender equity in Cambodian higher education. It offers policymakers, educators, and advocacy groups evidence-based insights for designing more inclusive and effective educational strategies. By addressing gaps in graduate-level participation, Cambodia can move closer to achieving gender parity across all levels of education, ultimately fostering a more equitable and empowered society.

To address the persistent gender disparities in Cambodian higher education, particularly at the graduate degree, master's, and PhD levels, a comprehensive approach is required with the involvement of all relevant stakeholders. Therefore, the study provides four recommendations:

1. Strengthen higher education policies that support gender in the educational system. This involves establishing a setting in which gender is taken into consideration throughout the entire planning and development process for education, particularly at higher education.
2. Promote and assist the appointment of women to positions of leadership in academic institutions and universities. It will guarantee that a diversity of viewpoints is available to contribute to higher education institutions and universities.
3. The Ministry of Education, Youth and Sport (MoEYS) should support and incentivize higher education institutions to build more dormitories that can accommodate female students. Safe and accessible on-campus housing is crucial for improving both access and retention for women in higher education, especially those from rural areas.
4. The Ministry of Education, Youth and Sport (MoEYS) and relevant stakeholders, should consider providing more scholarships to female student at graduate program, which include not only the tuition fee but also the study material such laptop and text books, travel and housing expenses in order to boost the number of females admitted to master and PhD programs.

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