



# THREATNING CONDITION IN INDIA AND KYRGYZSTAN DUE TO CANCER CAUSING HUMAN PAPILLOMA VIRUS.

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## ABSTRACT

**Background: INDIA:** The most common cancer caused due to HPV consist of cervical. i.e., 87.6% and oropharyngeal. i.e., 63%.

**KYRGYZSTAN:** The most common cancer caused due to HPV consist of cervical. i.e.,72% and colon rectal cancer

**Methods:** The study is done through a visit to eight cancer centres in Kyrgyzstan and India. It is a data collection through live communication with Oncologists and through the questionnaire given to the patients and the reference of book ANANTHANARAYAN AND PANIKER'S TEXTBOOK OF MICROBIOLOGY, PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE, ROBBINS AND COTRAN PATHOLOGICAL BASIS OF DISEASES.

## Result

Detailed statistical analysis on incident cases of cancers caused by HPV all over the India and Kyrgyzstan including the death rate and worldwide data collection.

## Conclusions:

Aim of this project is too aware the citizens of Kyrgyzstan and India about Human Papilloma Virus regarded cancers which includes anal cancer, penile cancer, oropharyngeal cancer, cervical cancer.

**Keywords** HPV [ Human Papilloma Virus], Cervical cancer, Anal cancer, Oropharyngeal cancer, Vulvar cancer, Penile cancer.

## INTRODUCTION:

Human Papilloma Virus (HPV) is a common sexually transmitted infection that can cause a variety of health problems, including genital warts and types of cancers which including Cervical cancer, Anal cancer, Vaginal and Vulvar cancer, Oropharyngeal cancer, Penile cancer

Cytogenetic and molecular studies conclude that Low-risk HPV does not integrate the genome of host cell, High-risk type HPV integrates nucleus of cervical epithelial cell. There are over 100 different types of HPV, but only a handful of them are considered high-risk strains that can cause cancer. Types 16 and 18 of human papilloma virus are at very high risk (in 70% cases) less affecting are types 31,33,52 and 58 are present in 70-100% cases of cervical cancer<sup>4</sup>. Implication of HPV 16 and 18 present in Aetiology of H- SIL<sup>4</sup>.

Through Recent studies we get to know that type 15 HPV are at high risk and it is also Informs us about type 16 is responsible for 60% of cases of cervical cancer; type 18 of HPV Contribute to the 10% cases<sup>7</sup>.

Squamous cell carcinoma related HPV is basaloid and warty as present in penile carcinomas in 40-50%<sup>4</sup>.

Circumcision in early age of life benefits Jews and Muslims as there are rarely cases of Penile cancer. In INDIA, Penile cancer is rarely seen in Muslims due to the practice of circumcision as mentioned above as religious rite in infancy<sup>4</sup>.

The most affected age group is from 20 to 24 years<sup>5</sup>.

BASLOID AND WARTY CARCINOMAS are commonly caused by type 16 of HPV the most common age group 60 years.

Benign genital warts called as CONDYLOMATA ACUMINATA are caused by low-risk HPV.

Low risk type of HPV including types 6 and 11 commonly found in CONDYLOMAS. The appearance of CONDYLOMA ACUMINATUM OR VENEREAL WART OR ANOGENITAL WART is caused due to Type 6 HPV<sup>4</sup>.

HPV is transmitted through skin-to-skin contact during sexual activity, including vaginal, anal, and oral sex. Risk factors of cervical cancer include these four

1. Sexual activity in early age.
2. Having multiple sexual partners.
3. due to high-risk type of oncogenic virus.
4. PROMISCUOUS MALE i.e., male sexual partner having potential role of high-risk HPV<sup>5</sup>.

Mixed type of HPV found in DYSPLASIAS.

## **CANCERS CAUSED BY HUMAN PAPILLOMA VIRUS**

Type 1 HPV and Type 2 HPV causes VERRUCA VULGARIS which is the most common Human warts. HPV 10 Type causes VERRUCA PLANA which is flat or slightly elevated wart, usually occurs on dorsal surface of hand and the face.

Type 1 HPV causes VERRUCA PLANTARIS or PLANTAR WARTS seen mostly on sole of the foot. HPV Type 16, 18,30,31,33 and from 51-53 are responsible from laryngeal and Oesophageal carcinomas<sup>4</sup>.

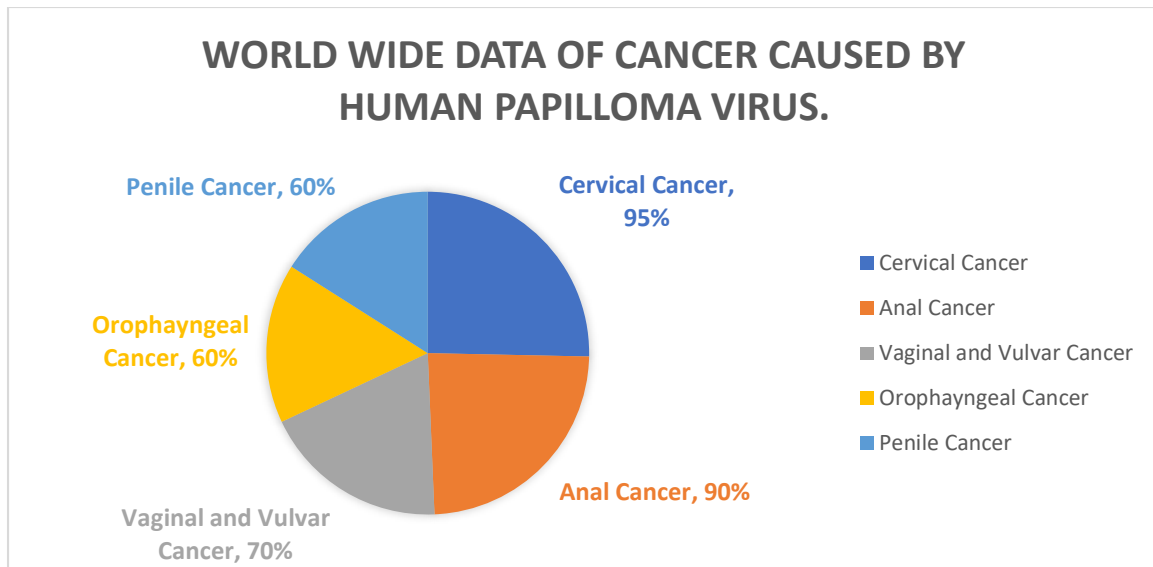
EPIDERMODYSPLASIA VERRUCIFORMIS is familiar to VERRUCA PLANA caused by genome of HPV Type 5 and 8 which is found in some tumours of this kind. Autosomal recessive disorder EPIDERMODYSPLASIA VERRUCIFORMIS leads to be infected by HPV 5 and 8 Types.

GROUP 1 CERVICAL Cancer and ANOGENITAL Cancer are caused by Alpha Papilloma Virus Type 16. HPV 18, 31, 33, 35,39, 45, 51, 52,56, 58 and 59 are responsible for Cervical cancer of GROUP 1 Type.

GROUP 2 A CERVICAL Cancer are mainly caused by HPV 68. HPV 26, 53, 66, 67, 70, 73, 82, 30, 34, 69, 85, 97, are responsible for Cervical cancer of GROUP 2 B Type.

GROUP 3 Type Cervical cancer are caused by HPV 6 and HPV 11. Beta Papilloma Virus Types HPV 5 and HPV 8 causes GROUP 2 B of Skin cancers<sup>12</sup>.

The third most common cancer in women is cervical cancer next to breast and lung cancer.



**[Fig.1. WORLD WIDE DATA OF CANCER CAUSED BY HUMAN PAPILOMA VIRUS]**

As we can see in the above given Fig.1 the worldwide distribution of cancers caused by Human Papilloma Virus includes the 60% of Penile cancer as there is equal contribution of Oropharyngeal cancer which is also 60%.

The biggest contribution to this Fig.1 is of Cervical cancer. i.e., 95% and the second mostly causing cancer is Anal cancer which contributes about 90% in the Pie Chart as we can see above.

The 70% contribution is of Vaginal and Vulvar cancer.

## METHODES

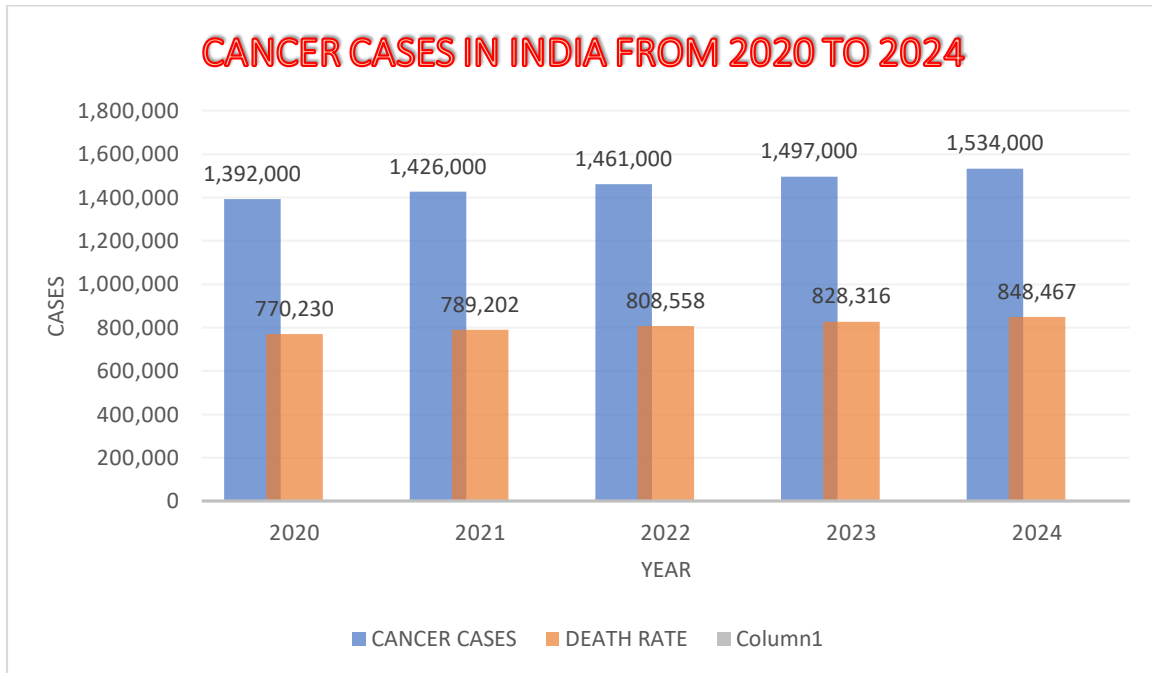
Data collection is done by visiting and Oncologist in OSH KYRGYZSTAN and INDIA. The questions were asked to Oncologist and answers are collected from them.

The patients that are admitted in hospital taken as participants. The study was conducted in 10 days.

The data collection is done through previous year records of Cancer cases and further data is calculated by using the statistical approach.

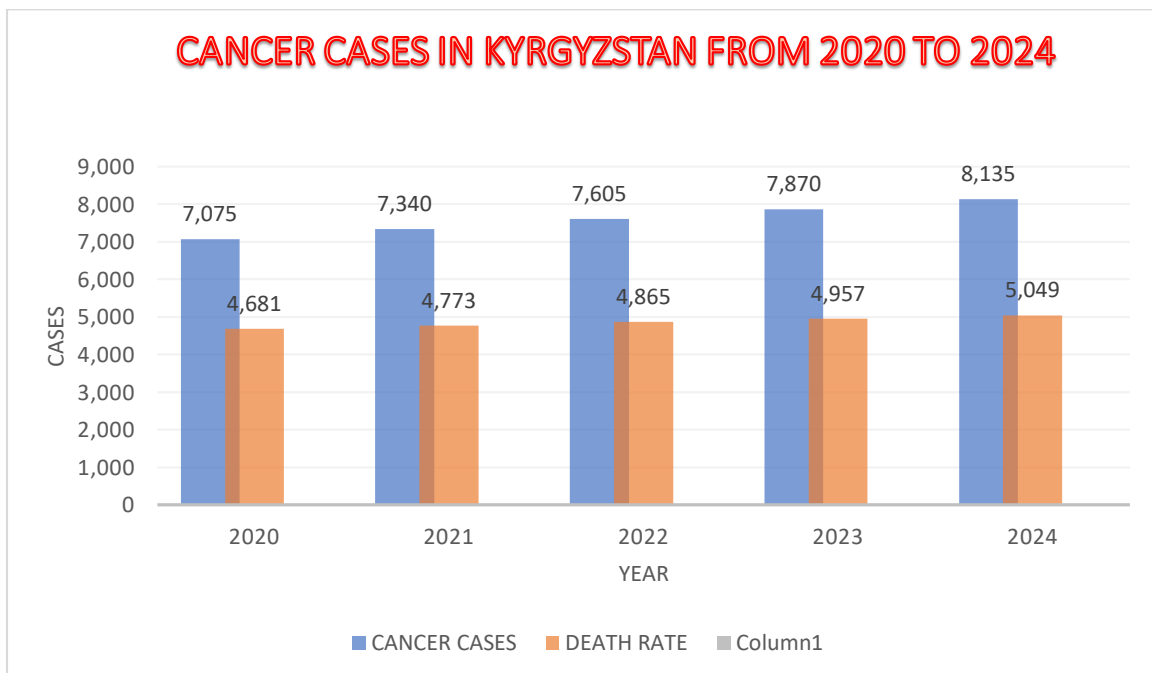
## STASTICAL ANALYSIS

### CANCER CASES IN INDIA FROM 2020 TO 2024



[Fig.2]

### CANCER CASES IN KYRGYZSTAN FROM 2020 TO 2024



[Fig.3.]

## POPULATION STUDY

### INDIA

In 2020 the incident cases of cancer are around 13,92,000 in which the death of people was in number 7,70,230. And the survival rate of patients was 6,21,770. Which shows that mortality rate is higher.

In 2021 the incident cases of cancer are around 14,26,000 in which the death of people was in number 7,89,202. As we can see the mortality rate is 50% and survival is 50%.

In 2022 the incident cases of cancer are around 14,61,000 in which the death of people was in number 8,08,558. As we can see here mortality rate is increased.

In 2023 estimated cases of cancer are around 14,97,000 and the contribution of death rate is 8,28,316 which is comparatively increased.

In 2024 the number may rise to 15,34,000 and death rate will contribute around 8,48,467.

### KYRGYZSTAN

**TABLE 1.** According to data of 2018 and 2020 we calculated the data of further four years. As seen in Fig .3

<i>NO</i>	<i>YEARS</i>	<i>NUMBER OF CASES</i>	<i>DEATH RATE</i>
1.	2020	7,075	4,681
2.	2021	7,340	4,773
3.	2022	7,605	4,865
4.	2023	7,870	4,957
5.	2024	8,135	5,049

As we can see in above table the rate of death is increasing per year.

## RESULT

**TABLE 2. INDIAN DATA OF CANCER CAUSED BY HUMAN PAILLOMA VIRUS**

S. NO.	SITES OF CANCER	MALES						FEMALES					
		2019	2020	2021	2022	2023	2024	2019	2020	2021	2022	2023	2024
1.	Oropharyngeal cancer	9,565	10,861	12,158	13,455	14,752	16,048	1,367	1,489	1,611	1,733	1,855	1,977
2.	Anus and Anal canal	1,893	2,149	2,405	2,661	2,917	3,173	1,193	1,349	1,505	1,661	1,817	1,973
3.	Vulva	-	-	-	-	-	-	1,112	1,216	1,320	1,424	1,528	1,632
4.	Vagina	-	-	-	-	-	-	1,749	1,966	2,183	2,400	2,617	2,834
5.	Cervix uteri	-	-	-	-	-	-	44,300	50,036	55,772	61,508	67,244	72,980
6.	Penis	2,864	3,159	3,454	3,749	4,044	4,339	-	-	-	-	-	-
7.	Total HPV related cancers	14,322	16,170	18,018	19,866	21,714	23,562	49,721	56,058	62,395	68,732	75,069	81,406
8.	Others	3,04,776	3,30,600	3,56,424	3,82,248	4,08,072	4,33,896	2,41,265	2,55,976	2,70,687	2,85,398	3,00,109	3,14,820
9.	All sites	3,19,098	3,46,771	3,74,444	4,02,117	4,29,790	4,57,463	2,90,986	3,12,035	3,33,084	3,54,133	3,75,182	3,96,231

Given [TABLE 2.] provide us with the detail information regarding the cases of cancer in INDIA.

The data from 2019 shows that number of male patients is relatively higher than female patients in case of Oropharyngeal cancer. i.e., 9,565 and 1,367. Year 2020 data shows that estimated cases in males are about 10,861 and in females is about 1,489. Similarly in 2021 and 2022 as well as 2023 shows us relative number of male patients. i.e., 12,158, 13,455 and 14,752. The contribution of female patients in this is about 1,611, 1,733 and 1,855. From given data approximate number of male cases will be 16,048 and in females will be 1,977 in 2024.

The data from 2019 shows that number of male patients is relatively higher than female patients in case of Anus and anal canal cancer. i.e., 1,893 and 1,193. Year 2020 data shows that estimated cases in males are about 2,149 and in females is about 1,349. Similarly in 2021 and 2022 as well as 2023 shows us relative number of male patients. i.e., 2,405, 2,661 and 2,917. The contribution of female patients in this is about 1,505, 1,661 and 1,817. From given data approximate number of male cases will be 3,173 and in females will be 1,973 in 2024.

The data from 2019 shows that number of female patients in case of Vulvar cancer is 1,112. Year 2020 data shows that estimated cases in females is about 1,216. Similarly in 2021 and 2022 as well as 2023 shows us relative number of female patients in this is about 1,320, 1,424 and 1,528. From given data approximate number in females will be 1,632 in 2024.

The data from 2019 shows that number of female patients in case of Vaginal cancer is 1,749. Year 2020 data shows that estimated cases in females is about 1,966. Similarly in 2021 and 2022 as well as 2023 shows us relative number of female patients in this is about 2,183, 2,400 and 2,617. From given data approximate number in females will be 2,834 in 2024.

The data from 2019 shows that number of female patients in case of Cervix uteri cancer is 44,300. Year 2020 data shows that estimated cases in females is about 50,036. Similarly in 2021 and 2022 as well as 2023 shows us relative number of female patients in this is about 55,772, 61,508 and 67,244. From given data approximate number in females will be 72,980 in 2024.

The data from 2019 shows that number of male patient case of Penile cancer is 2,864. Year 2020 data shows that estimated cases in males are about 3,159. Similarly in 2021 and 2022 as well as 2023 shows us relative number of male patients. i.e., 3,454, 3,749 and 4,044. From given data approximate number of male cases will be 4,339 in 2024.

Total HPV related cancers cases from 2019 in males is about 14,322 and in females is about 49,721. Collectively year 2020, 2021, 2022 and 2023 contribute in the numbers of male patient cases 16,170, 18,018, 19,866 and 21,714. Female cases over 56,058, 62,395, 68,732 and 75,069. The year 2024 will approximately have the number of Male cases 23,562 and Female cases over 81,406.

Other cancer cases contribute in year 2019 number of Male patients is about 3,04,776 and that of Female cases is 2,41,265. Collectively year 2020, 2021, 2022 and 2023 contribute in the numbers of male patient cases 3,30,600, 3,56,424, 3,82,248, and 4,08,072. Female cases over 2,55,976, 2,70,687, 2,85,398 and 3,00,109. In 2024 cases will rise to 4,33,896 in males and 3,14,820 in females.

ALL SITE CANCER cases contribute in year 2019 number of Male patients is about 3,19,098 and that of Female cases is 2,90,986. Collectively year 2020, 2021, 2022 and 2023 contribute in the numbers of male patient cases 3,46,771, 3,74,444, 4,02,117, and 4,29,790. Female cases over 3,12,035, 3,33,084, 3,54,133 and 3,75,182. In 2024 cases will rise to 4,57,463 in males and 3,96,231 in females.

## Discussion

Early stage of cancer development signifies the patient is usually asymptomatic.

The spread of cancer is due to the Environmental factors up to 80 – 90% majorly Tobacco usage leading to Oropharyngeal cancers. Excessive intake of alcoholic beverages causes mostly Liver cancer. Recent studies shows that beer consumption leads to rectal cancer. Smoked fish associated with stomach cancer. Occupational exposures to benzene, arsenic, cadmium etc.



Long term use of contraceptive pills.

Breastfeeding a child is helpful for mother as it reduces the risk of cancer.

**TABLE 3. Awareness about stages of cancer for example.**

Cervical cancer	Stages	
	Early stage	1A, 1B, AND 2A
	Locally advanced	2B, 3A AND 4A
	Advanced stage	4B

Warning signs in breast cancer includes a lump or hard area over the breast.

Common warning signs include frequent changes in digestion, persistent cough, blood loss from any orifice present naturally, unexpected weight loss, a swelling or sore that does not recover.

Examination is done with naked eyes with the help of Lesions present over pubis which can be extended to the trunk in male patients.

3% of Acetic Acid is applied on the Lesions present over the cervix which turns white and after that there is visual inspection. Which is also called as VIA (Visual Inspection After Acetic Acid). This test is 50% sensitive and specific.

Pap screening or pap test is Perform as an examination on females which is nothing but collection of pap smear. i.e., collection of cells from cervix. Cervical screening is also a recommended procedure<sup>6</sup>.

HPV vaccination is advised for girls of age group 11-26. Three vaccines are available now name include bivalent, quadrivalent, and 9 – valent vaccine.

Recently There is detection of 40% of cervical cancer cases at late stages in Kyrgyzstan.

In Kyrgyzstan health officials took successful HPV Vaccination program. In which 70% of girls are vaccinated between the age of 11 and 14. Around 600 women get cervical cancer per year and the survival rate is 50% only.

## Conclusion

- 1) To create awareness among the citizens of INDIA and KYRGYZSTAN about. The seriousness of cancers caused by Human Papilloma Viruses.
- 2) To educate citizens about warning signs and primary prevention.
- 3) To increase awareness about early and late stages.
- 4) To encourage them about vaccinations and their future benefits.
- 5) To inform them about early detection and hospitalisation.
- 6) Eventually increase the survival rate.

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