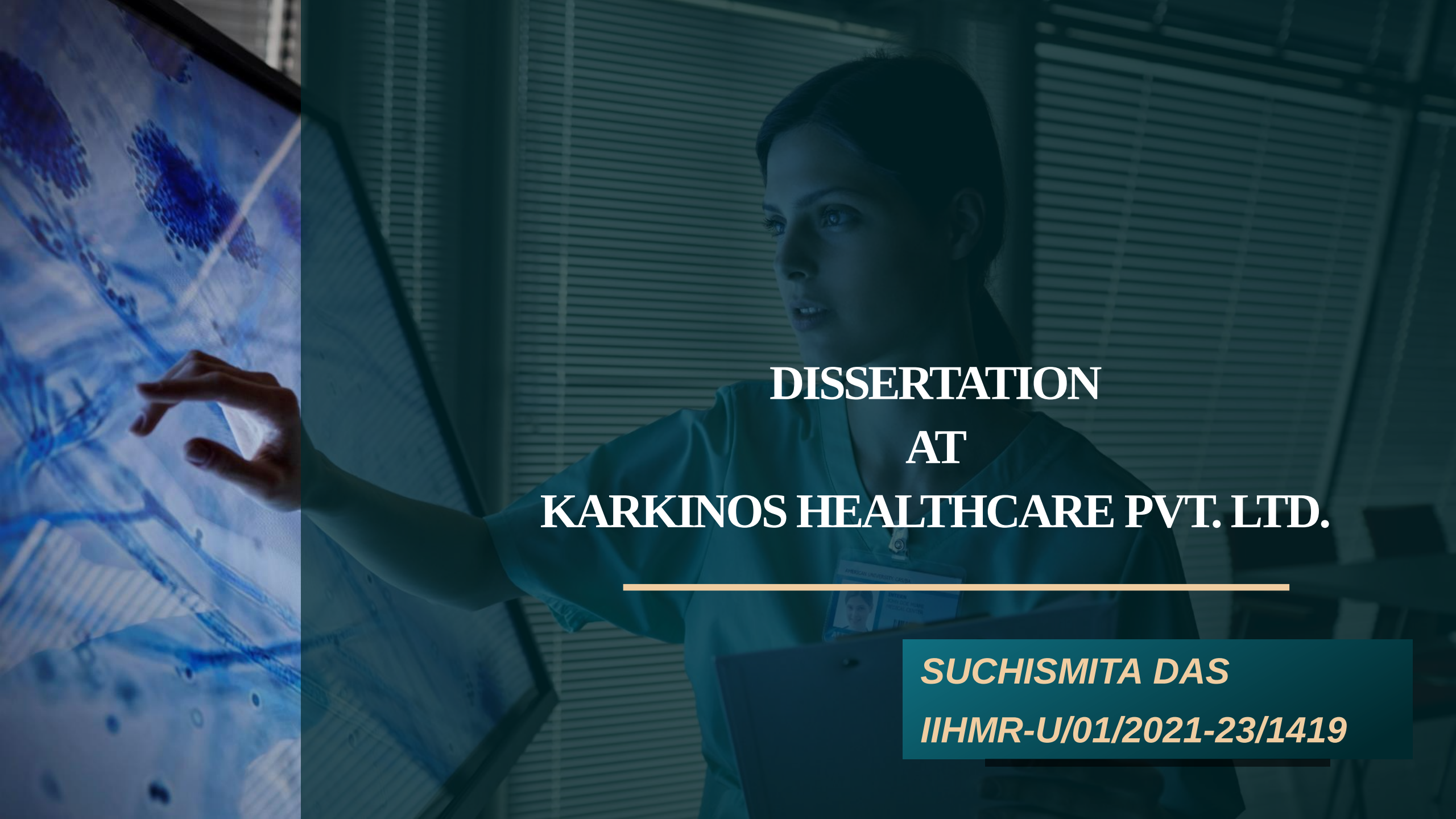

DISSERTATION
AT
KARKINOS HEALTHCARE PVT. LTD.

SUCHISMITA DAS

IIHMR-U/01/2021-23/1419

A SYSTEMATIC REVIEW FOR RATING THE ACCURACY OF VARIOUS SCREENING METHODS USED FOR EARLY DETECTION OF CERVICAL CANCER.

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Guided by:- Dr.Alok K Mathur

INTRODUCTION

- Cervical cancer is a major cause of cancer mortality in women and more than a quarter of its global burden.

- As per WHO estimates the fourth most common cancer in women, in 2020 cervical cancer was responsible for 342,000 deaths worldwide, and estimated number of new cervical cancer cases is 604,127. About 90 % of the new cases and deaths worldwide in 2020 occurred in low and middle- income countries.

- The American Cancer Society advises that individuals with cervix initiation start getting screened for cervical cancer at age 25 and undergo primary human Papillomavirus testing every five years until they are 65. Individuals aged 25 to 65 years should be screened with cytology alone every 3 years or cotesting (HPV testing in combination with cytology) every 5 years if primary HPV testing is not available.

BURDEN

- cervical cancer caused by HPV infection due to unhygienic measures.
- Estimated incident cases of cervical cancer of india 18.3% (1,23,907 cases).
- Mizoram(23.07/1,00,000) state is the highest incidence rate and Dibrugarh has lowest(4.91/1,00,000).
- Cervical cancer is a preventable disease .
- By getting HPV vaccination, Getting timely cervical cancer screening, women can reduce their risk of developing cervical cancer.

Ref:https://prescriptec.org/countries/india/ dept. of biotech govt of india

BURDEN

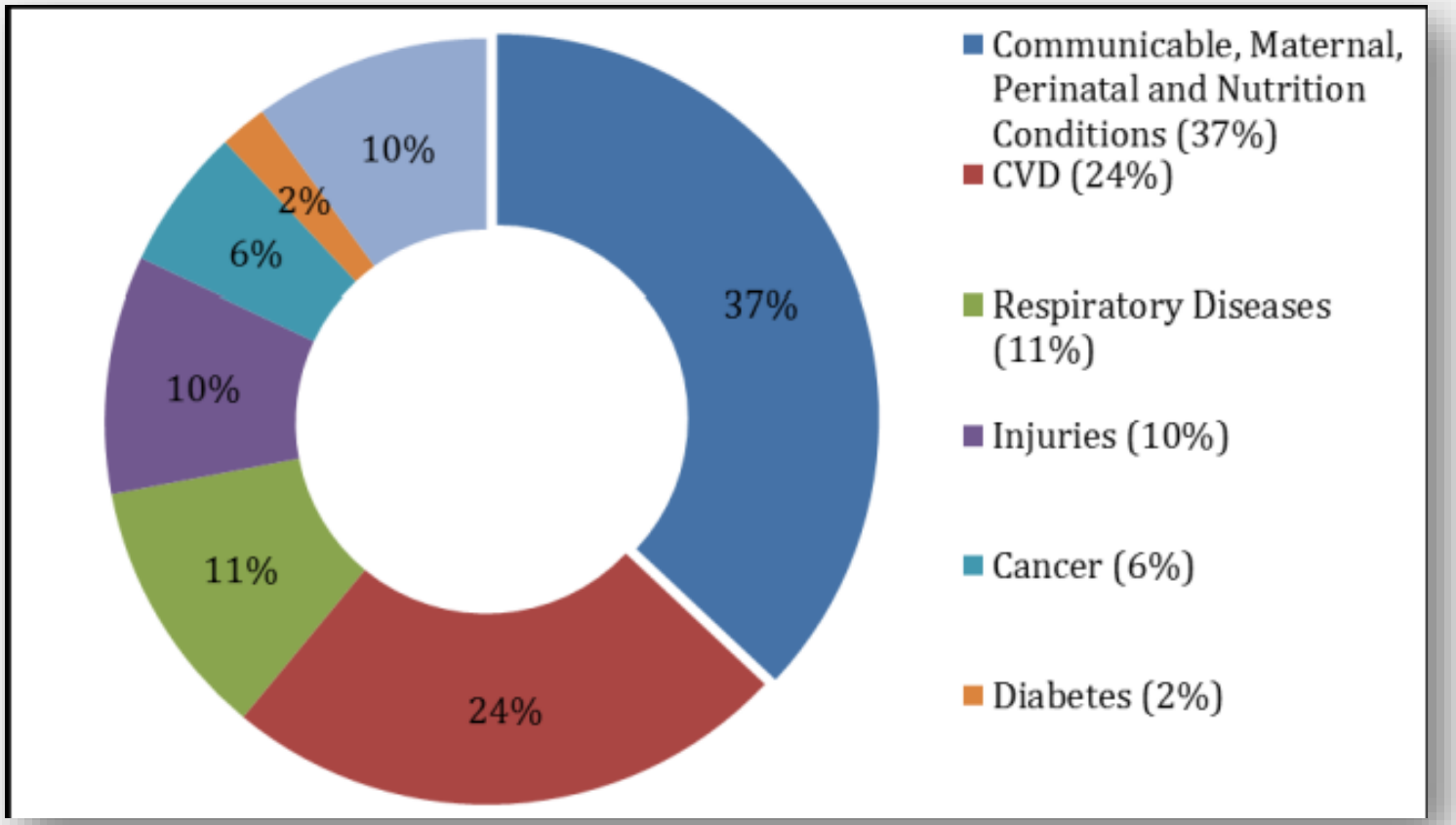
- The World Health Organization (WHO) has set a goal of eliminating cervical cancer by 2030,

  90-70-90 target –

- 90 % girls should be HPV vaccinated by age 15.
- 70 % of women should be screened by high performance test age of 35 and again by the 45.
- 90 % women with per cancer treated .
- To achieve this goal, the WHO is working to increase HPV vaccination rates, improve cervical cancer screening programs, and provide access to treatment for women in developing countries.

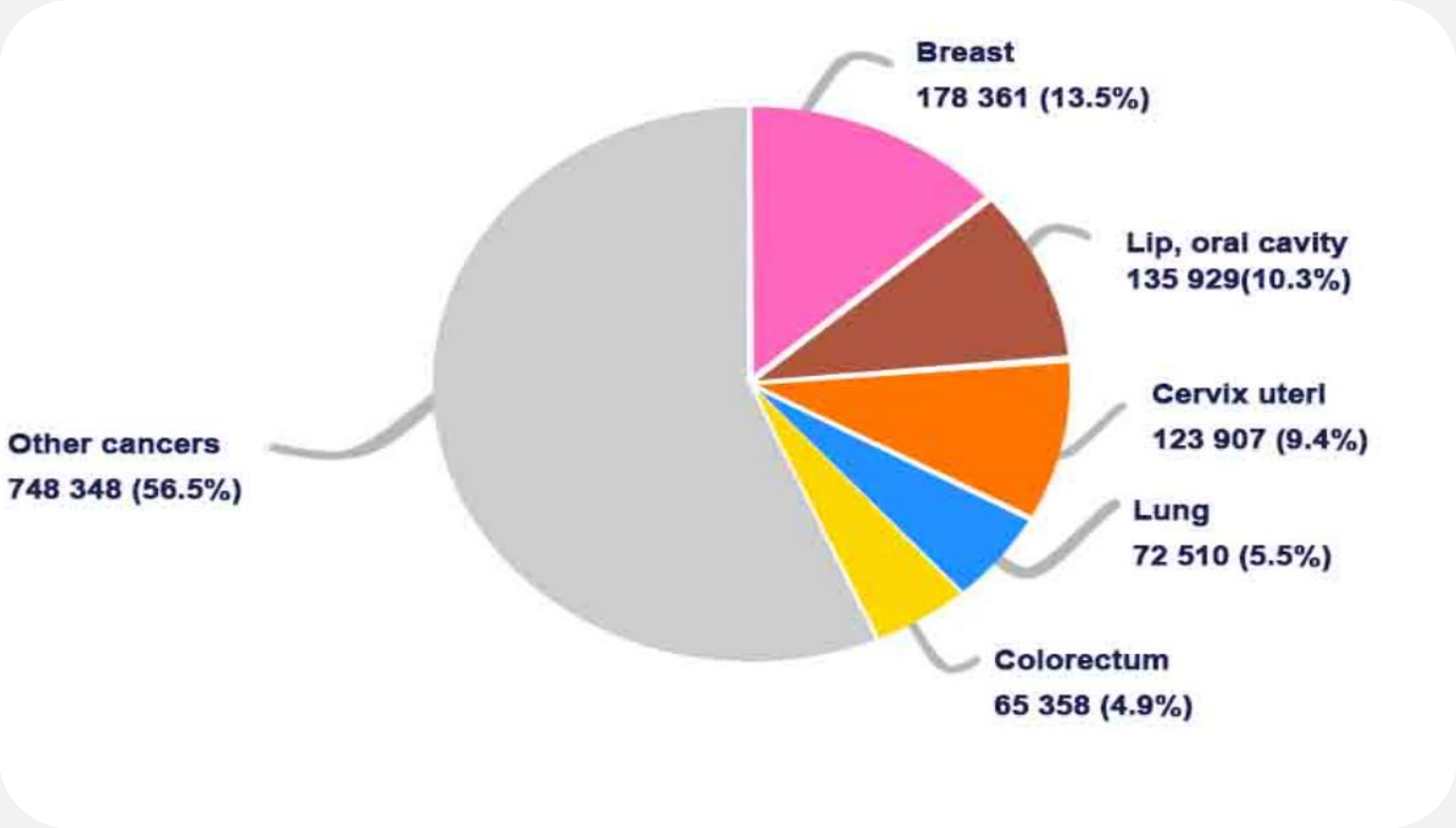
Ref https://www.who.int/initiatives/cervical-cancer-elimination-initiative

PREVALENCE OF DISEASES IN INDIA



- Based on this pictorial depiction it is seen that 37% of the diseases caused in India is due to the communicable or nutritional conditions
- Followed by major disease prevalence in India is due to Respiratory diseases
- Only 6% as of now the prevalence of cancer is present in India

PREVALENCE OF CANCER IN INDIA



- This pie representation shows that new cases of cancer in India till 2022
- As per the analysis other cancers cumulatively had the number of cases of 7,48,348 which accounts for 56.5%
- After that breast cancer is the most prevailed form of cancer that do occur which stands at 13.5%
- Cervical cancer 9.4%

RECOMMENDATIONS

WHO RECOMMENDATIONS FOR CERVICAL CANCER

- According to WHO guidelines the most preferred method for screening of cervical cancer are HPV DNA.
- As per norms set by the WHO the screening starts at the age of 25 with regular screening every 3 to 5 years (women living with HIV) and 5- 10 years (for general population)
- Testing for HPV-DNA can identify high-risk HPV strains.
- As per study and responses from the users it proved that women get more comfortable regarding home sample collection by self testing kit.

ICMR RECOMMENDATIONS FOR CERVICAL CANCER

- ANMs and staff nurses should be there for cervical cancer screening VIA at the Primary Health Centre level.
- The master trainers have been selected as gynecologists and woman medical officers who have received training in cervical cancer screening and management.
- A complete 10-day training programmed for ANMs and staff nurses will be conducted at designated medical colleges or district hospitals, where practical skills such insertion of a speculum, performing VIA tests, and using the thermal ablation procedure should be offered.
- At the conclusion of the course, the student must receive at least a 70% on the knowledge evaluation and an 80% on the skill assessment. .

NCG RECOMMENDATION FOR CERVICAL CANCER

- For cervical cancer primary screening method if limited resources are there then VIA and for optimal resources and high resources HPV DNA should be done.
- For VIA Trained primary care workers, trained nurse should be there but for HPV test along with trained nurse physician should be present there.
- For both VIA and HPV test the targeted age group should be 30-65 yrs.

NPCDC RECOMMENDATION FOR CERVICAL CANCER

- National Programme for Prevention & control of cancer, Diabetes, Cardio vascular diseases and stroke promotes VIA methods for cervical cancer screening.

- Age should be 30 – 69 years

ASCO RECOMMENDATION FOR CERVICAL CANCER

- American Society of Clinical Oncology recommends, In situations with limited population, human papillomavirus (HPV) DNA testing is advised; in settings with huge population, visual examination with acetic acid may be sufficient.

- 25–65, every five years; if two consecutive negative tests at five-year intervals, then every ten years.

- Women who are HIV-positive should be screened with HPV testing after diagnosis, twice as many times per lifetime as the general population

METHODOLOGY

- **5.1 Research question**

  What is the most accurate screening method for the early detection of cervical cancer?

5.2. Objectives

To analyse the different methods used to screen for the early detection of the cervical cancer.

5.3. Study Selection

The study was selected from various research articles from the year 2014 to 2023, the publishing window was taken into consideration.

METHODOLOGY CONTD.

Data Sources and Selection

- Cervical cancer, screening test, cervical screening test, cervical elimination, cancer testing, Pap smear, Visual Inspection with Acetic Acid, vaginal smear, Human papilloma virus (HPV), HPV testing, effectiveness of result these are some of the search phrases utilised during the process.

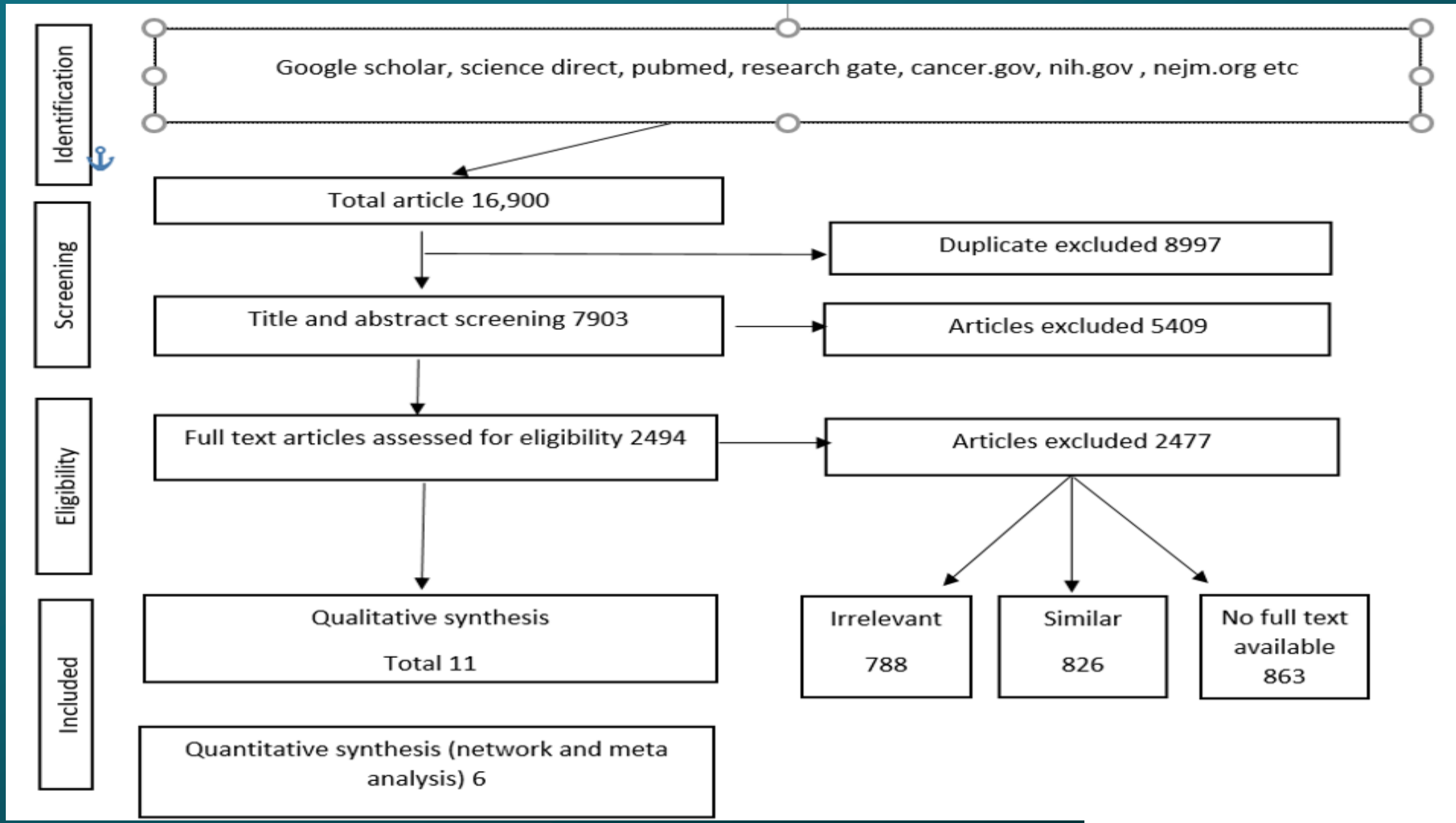
- There are 16,900 reports were collected through information database which incorporates google scholar, science direct, pubmed, research gate, cancer.gov, nih.gov to get to the distributed work.

- These reports were further analysed, duplicates were removed and the report were assigned to a complete structured dataset using additional relevance-based criteria.

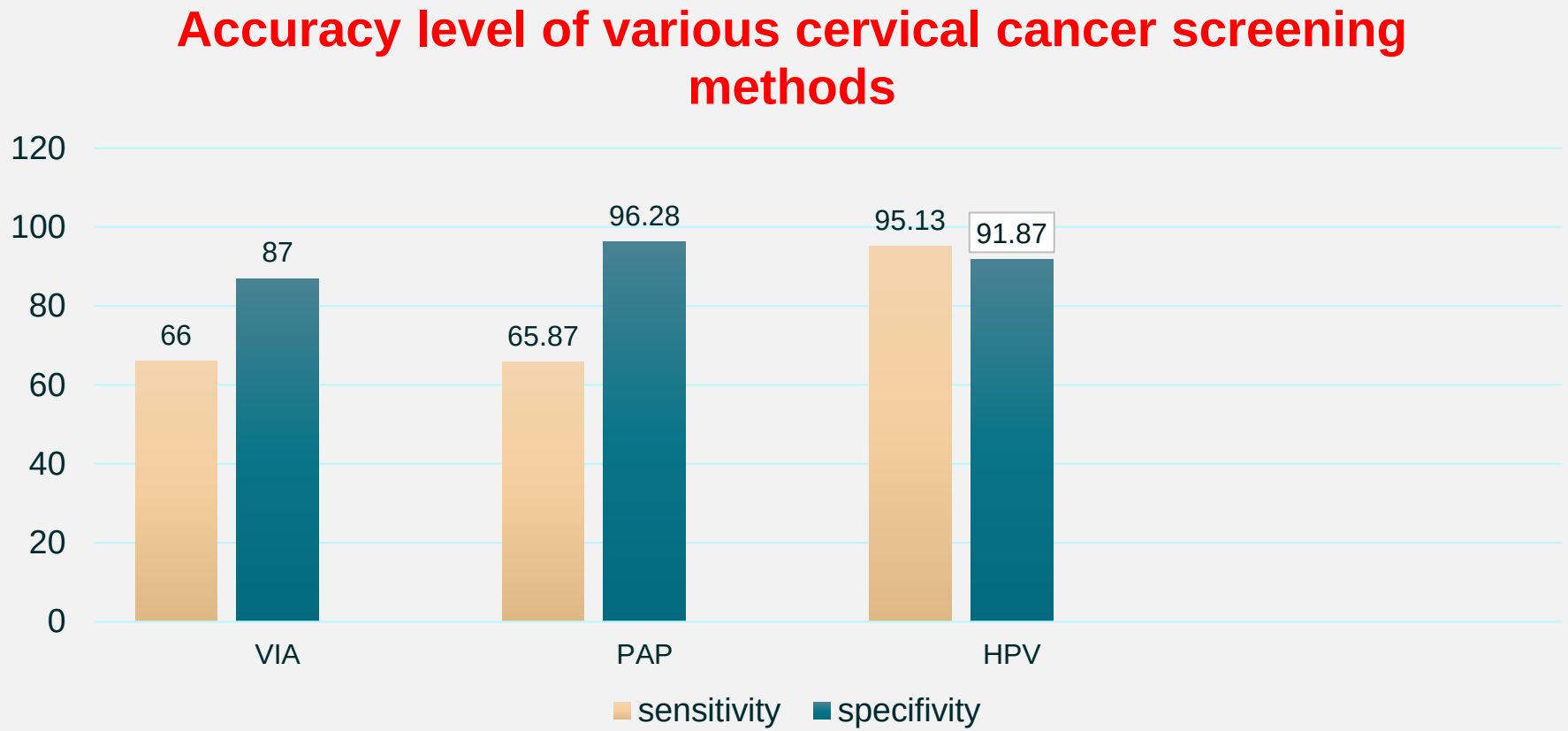
- The three steps are - reviewing the abstract and conclusion, materials and methods and last the final result.

- 17 papers were chosen for in-depth investigation and were ranked according to their suitability

PRISMA FLOW DIAGRAM OF THE STUDY



RESULTS AND DISCUSSIONS



Ref: https://apps.who.int/iris/bitstream/handle/10665/342366/9789240030886-eng.pdf

RESULTS AND DISCUSSIONS

Screening test	Sensitivity	Specificity	Price (INR)	Frequency	In 10 years	Total cost in 10 years
VIA	66	87	300-350/-	1 times in 3 years	3 times	Around 1100/-

Sensitivity and Specificity of VIA has 66 % and 87%. The average price in market 300-350 /- and It should be done 1 times in 3 years. So on the bases of 10 years it should be done 3 times. So for that case total cost should be around 1100/-.VIA should be done .

Sensitivity is the ability of a test to correctly identify patient with a disease (true positive).
Specificity is the ability of a test to correctly identify patient without a disease (false positive).

RESULTS AND DISCUSSIONS CONTD.

Screening test	Sensitivity	Specificity	Price (INR)	Frequency	In 10 years	Total cost in 10 years
Pap Smear	65.87	96.28	550-600/-	1 times in 3 years	3 times	Around 1800/-

Sensitivity and Specificity of Pap Smear has 65.87 % and 96.28%. The average price in market 550-600/- and It should be done 1 times in 3 years So on the bases of 10 years it should be done 3 times. So for that case total cost should be around 1800/-.

RESULTS AND DISCUSSIONS CONTD

Screening test	Sensitivity	Specificity	Price (INR)	Frequency	In 10 years	Total cost in 10 years
HPV	95.13	91.87	1000/-	1-2 times in 10 years	1- 2 times	Around 1800/-

Sensitivity and Specificity of HPV testing has 65.87 % and 96.28%. Total accuracy is high compared to the VIA and Pap Smear test. The average price in market 1000 /- and It should be done 1 or 2 times times in 10 years So on the bases of 10 years it should be done most probably 1 times. So for that case total cost should be around 1000 0r 2000/-.

SUGGESTION

- In the context of accuracy and cost effectiveness HPV should suggested

- Government should include cervical cancer screening test in their health scheme

Example-
Under Chiranjeevi Yojna (for Rajasthan) , the eligible candidate can receive benefit of 5 lakhs, Swastha Sathi (for Westbengal) its 1.5 lakh , government should improve those procedures and include those screening tests in those scheme. So that it can be a major part of early detection of cervical cancer.

REFERENCE

1. Srivastava AN, Misra JS, Srivastava S, Das BC, Gupta S. Cervical cancer screening in rural India: Status & current concepts. The Indian journal of medical research. 2018 Dec;148(6):687.
2. Bobdey S, Sathwara J, Jain A, Balasubramaniam G. Burden of cervical cancer and role of screening in India. Indian journal of medical and paediatric oncology. 2016 Oct;37(04)
3. Satyanarayana L, Asthana S, Bhambani S, Sodhani P, Gupta S. A comparative study of cervical cancer screening methods in a rural community setting of North India. Indian journal of cancer. 2014 Apr 1;51(2):124-8.
4. Specificity, sensitivity and cost. *Nat Rev Cancer* **7**, 893 (2007). https://doi.org/10.1038/nrc2287

5. Bouvard V, Wentzensen N, Mackie A, Berkhof J, Brotherton J, Giorgi-Rossi P, Kupets R, Smith R, Arrossi S, Bendahhou K, Canfell K. The IARC perspective on cervical cancer screening. New England Journal of Medicine. 2021 Nov 11;385(20):1908-18.
6. Gupta R, Gupta S, Mehrotra R, Sodhani P. Cervical cancer screening in resource-constrained countries: current status and future directions. Asian Pacific journal of cancer prevention: APJCP. 2017;18(6):1461.

THANK YOU

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