

# Cancer Diagnostics Conference & Expo

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## Assessment of women's status of knowledge regarding cervical cancer in different communities and the role of cervical health literacy in the early detection and prevention of cervical cancer

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Cervical cancer is one of the most prevalent and deadly female cancers worldwide and is especially common in developing countries. Various surveys have been conducted in the recent years that revealed various insights into the knowledge, perceptions and practices of the different communities regarding cervical cancer. Studies clearly indicated that women in different communities especially in lower resource settings have limited knowledge about cervical cancer, its link with Human Papilloma Virus (HPV), prevention and even less or not at all familiar with screening and HPV vaccine. That lack of awareness may result in poor utilization of HPV vaccine and screening services, even when these are available. The prevention of cervical cancer needs a number of factors to be effectively in place like the awareness of cervical cancer etiology, barriers including intrapersonal, interpersonal and institutional barriers to accessing health care need to be removed, knowledge about the fact that HPV vaccination prevents most of the cervical cancer and screening can detect precancerous lesions which can be mitigated by treatment. Therefore, there is a major need to develop educational intervention programs to address HPV vaccine safety concerns and educate the community by targeting the risk population on risk factors for cervical cancer and practices related to its prevention and early detection. Improvement of cervical health literacy level is a major step towards the prevention and early detection of this dreadful disease.

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## Breath diagnostics: Enhancing cancer detection and monitoring

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When there is a change in your health, you want to find out as early as possible. Therefore, the possibility of routine monitoring of metabolic disorders via breath analysis has attracted considerable scientific and clinical interest for many years. Lung cancer, in particular, attracts more attention due to the fact that early diagnosis of it results in significantly improved survival rate compared to more advanced diseases. The volatile organic compounds (VOCs) in exhaled breath, which are mainly blood borne, particularly provide valuable information about the subject's physiological and pathophysiological conditions. Additionally, breath diagnostics is non-invasive, real-time, painless and agreeable to patients. This new generation of medical diagnosis is enabled by advances in the design and use of biomaterials for medical and clinical applications, from nano to macro-materials and protein to tissue. We have developed a wireless sensor array based on single-stranded DNA (ssDNA) decorated single walled carbon nanotubes (SWNT) for the detection of cancer biomarkers in breath. A number of different DNA sequences, selected by molecular dynamics simulation, were used to functionalize SWNT sensors to detect trace amount of methanol, benzene, dimethyl sulfide and acetone which are potential biomarkers of lung cancer. Our tests have indicated that DNA functionalized SWNT sensors exhibit great selectivity, sensitivity, reproducibility and repeatability. Furthermore, different molecules can be distinguished and quantified through the simultaneously complex measurements enabled by this sensor array. Thus, the sensor array has demonstrated an excellent potential to be applied in chemical or bimolecular detection for cancer early detection and monitoring through breath diagnostics.

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