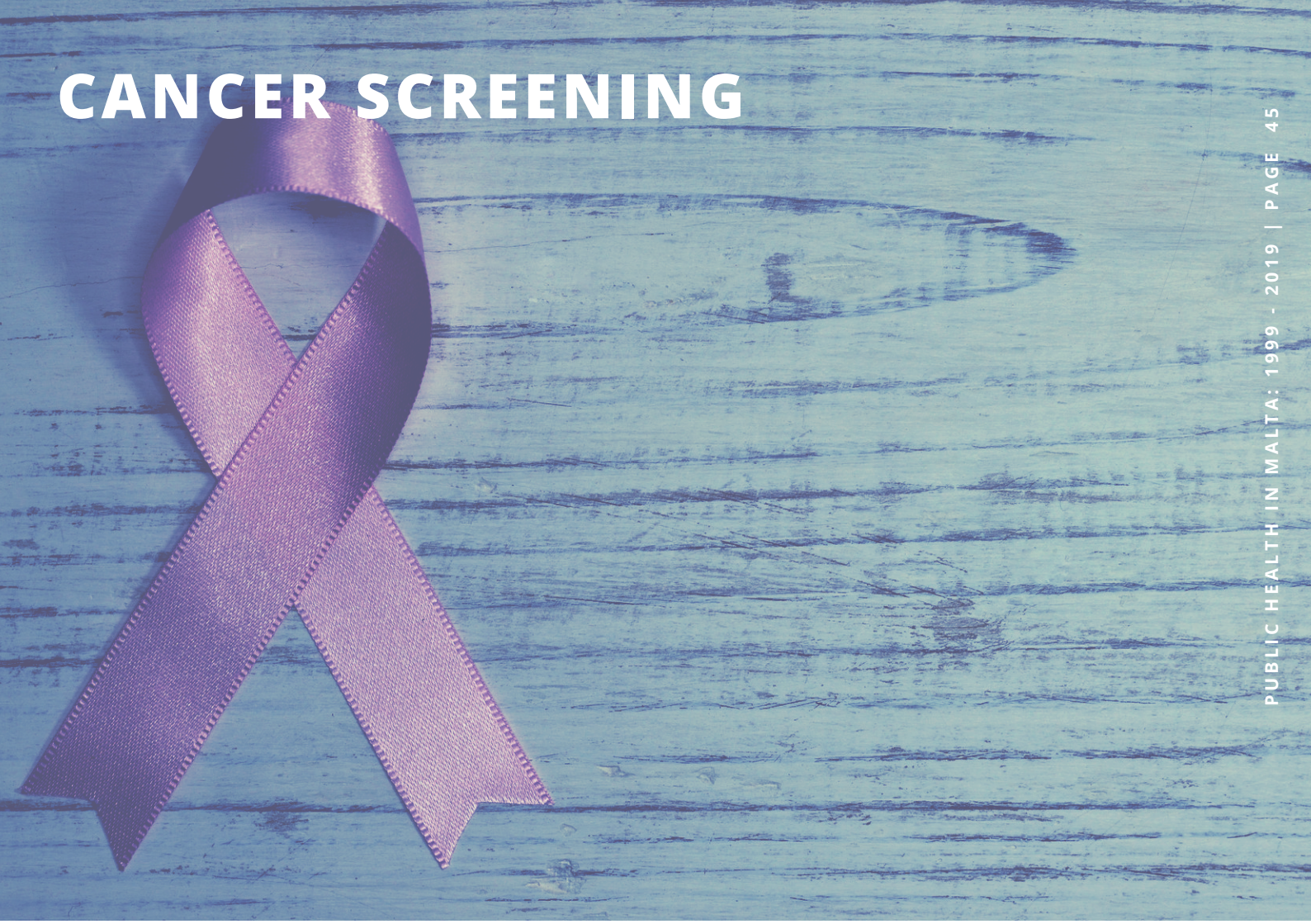

SCREENING FOR BREAST, CERVICAL AND COLORECTAL CANCER – AN UPDATE ON THE NATIONAL CANCER SCREENING PROGRAMMES

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ABSTRACT

Early detection of cancer can significantly reduce mortality and improve the quality of life of persons with cancer. In this article we describe the three national screening programmes that have been introduced in Malta since 2009 and that are based on guidelines supported by the European Commission. Screening for breast cancer was the first national screening programme implemented in Malta. After several years of roll-out and gradual expansion of the service, this programme is now reaching the targets of the European Commission on Breast Cancer (ECIBC) Guideline Group in terms of target population and screening frequency. Colorectal Cancer (CRC) Screening was the second programme to be introduced in 2013 while Cervical Cancer Screening was launched in 2016. These programmes are being gradually scaled up, and there is continuous investment in new technologies and human resources. Low participation rates remain a challenge, however improvements have been achieved following awareness campaigns and evaluation of the invitation protocols.

Background

Cancer is a 'fierce' public health enemy. Every year it is attributed as the main cause of death for around 30% of all mortality in Malta. Nearly half of cancer deaths can be avoided with more preventive action to address and allay risks. Reducing the incidence of cancer by tackling major life-style determinants, such as smoking, nutrition and physical activity, is a major objective of public health work. Another important and effective prevention tool is screening for cancer.

Regular and systematic examinations can detect the disease early, when it is more responsive to less aggressive treatment. If followed by appropriate care, these examinations can significantly reduce cancer mortality and improve the quality of life of cancer patients.

Screening refers to the use of relatively simple tests across an apparently healthy population in order to identify individuals who have risk factors or an unrecognized disease or defect. World Health Organisation (WHO) criteria specify that a screening test is not intended to be diagnostic, and persons with a positive or suspicious finding must be referred for a confirming diagnosis and necessary treatment[1]. It is essential that screening identifies those who are more likely to be helped than harmed by further tests or treatment to reduce the risk of a disease or its complications[2].

In 2003, the Council of the European Union, in accordance with the WHO criteria, recommended cancer screening with a systematically organised population-based approach and quality assurance at all appropriate levels[3]. Screening programmes were recommended for breast, cervical and colorectal cancers in agreement with evidence-based guidelines.

Organised cancer screening programmes in Malta

Screening represents an important public health function. All three National Cancer Screening Programmes are guided by the principle that if cancers are detected at an early stage or even in the pre-cancerous stage, treatment will be less invasive, is more likely to be successful and the survival rate is improved.

As outlined in the European Code Against Cancer[4], regular participation in Breast, Cervical and Colorectal Screening Programmes is one of the ways to reduce both mortality as well as cancer risk. Screening for colorectal cancer and cervical cancer can identify precancerous stages that can be treated and stopped from developing into cancer.

The introduction of a screening programme should follow only after careful evaluation and cost benefit analysis. The publication of guidelines supported by the European Commission has paved the way considerably for the introduction and implementation of the three National Cancer Screening Programmes.

Screening programmes often feature highly on the political agenda with the decision to introduce a screening programme being subject to multiple pressures, including those from NGO's, cancer survivors and the general public. The first National Screening Programme to be introduced in Malta was that of Breast Cancer Screening launched towards the end of 2009. This was a long-awaited electoral promise with the media also drawing public attention to the fact that Malta was one of the 2 or 3 remaining EU countries not having such a programme in place.

Breast Cancer Screening

The programme initially targeted women aged between 54 to 60 years who were called for regular screening with a three-year interval cycle. Subsequently, the age group was expanded to cover an increasing spectrum of cohorts. The European Commission on Breast Cancer (ECIBC) Guideline Group5 strongly recommends mammography screening for asymptomatic women aged 50 to 69 years with an average risk of breast cancer. Currently the Breast Screening Programme has reached this target and offers mammography screening to all women aged between 50 and 69 years. In addition, the screening interval has been reduced from 3 years to a 2-year interval period, in keeping with EU international guidelines.

From the 13,000 women who are screened each year, around 7% are recalled for further investigations and under 1% of all women screened are diagnosed with breast cancer. Till the end of 2018, a total of 468 breast cancer cases have been diagnosed through the Breast Screening Programme.

The question which is often raised is: how effective is routine breast screening in reducing breast cancer mortality? In 2016 a report was commissioned by the Agency for Healthcare Research and Quality to review the 2009 US Preventive Services Taskforce Recommendation[6]. This advised biennial mammography screening for average risk women aged 50-74 years.

The researchers concluded that mammography screening does decrease mortality from breast cancer, with higher statistical significance being seen in older age groups (50-69 years) compared to the younger age groups. The number of deaths prevented was highest in the 60 to 69-year age group, with 12-21 deaths being prevented per 10,000 women screened for 10 years (Figure 1). Meta-analyses from recent reviews conducted by the EUROSCREEN working Group indicated a 25-31% mortality reduction for women aged 50-69 years.

Mammography screening at any age is a trade-off between a continuum of benefits and potential harms (through overdiagnosis and radiation) that varies at population and individual levels.

Over the past 10 years, there has been a slight reduction in the mortality rate of breast cancer since the introduction of breast cancer screening. The reason for this is unknown, but it could be the result of a combination of factors, including screening and earlier diagnosis, and the availability of new treatment options.

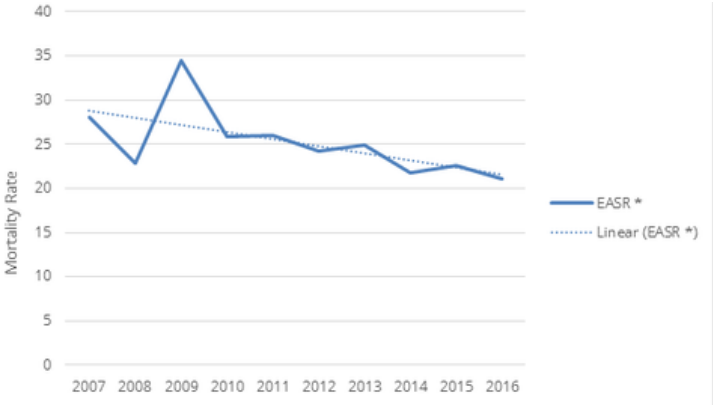

Figure 1. Mortality Rate (EASR)* of breast cancer in the Maltese Islands between 2007-2016
* EASR: age-standardized rates (per 100,000 women) using the European standard population

Colorectal cancer screening

The second programme to be introduced was that for Colorectal Cancer (CRC) Screening, which commenced a phased roll out in 2013. Both men and women aged 60-64 years were invited to participate over a 2-year period.

Colorectal cancer is a major public health problem in Malta, being the second most commonly diagnosed cancer in both men and women with approximately 253 new cases diagnosed in 2016[7]. Ninety-five percent of cases occur in people aged over 50 years.

The aim of CRC screening is to lower the burden of CRC in the population by discovering the disease in its early latent stages where treatment is more effective than if diagnosis occurs in the later stages. In addition, early treatment of invasive lesions, for example by endoscopic resection, can be less detrimental for quality of life.

Screening also identifies precursor lesions and thus has a prevention effect, with the endoscopic removal of premalignant lesions reducing the incidence of CRC by avoiding the progression to cancer. Since the introduction of the Colorectal Screening Programme in 2013, the incidence of colorectal cancer has increased, an average of incidence between 2013 – 2016 shows 275 cases per year, compared to an average incidence of 219 cases yearly picked up during the previous 4 years (Figure 2).

A possible reason for this increase is that more cases are being picked at an early stage because of repeated screening. To date, the Colorectal Screening Programme has resulted in 133 cases of colorectal cancer being detected.

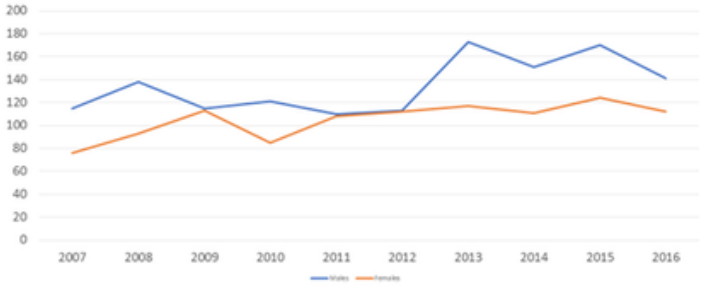

Figure 2. Incidence of colorectal cancer, Malta, 2007-2016 (source: DHIR)

There is sufficient evidence to indicate that invitation to CRC Screening reduces mortality from CRC by 14-16%8,9. A similar reduction in mortality was also reported by a systematic review commissioned for the US Preventive Services Taskforce, where a 9-22% CRC mortality reduction was reported with biennial screening after 2 to 9 rounds of screening and 11-30 years of follow up[10].

The CRC Screening Programme has expanded substantially over the years. Currently, screening through the Faecal Immunochemical Test (FIT) is offered to all men and women aged 55–69 years with a two-year screening interval. Immunochemical tests have improved test characteristics compared with conventional Guaiac-based faecal occult blood tests.

FIT is both analytically and clinically more sensitive and specific for the detection of haemoglobin, so only a single test is required without any change in diet prior to taking the test.

The FIT also allows for changes in the designated 'cut off' point at which a result is designated positive. By changing the 'cut-off' concentration, the proportion of false-positive tests and the number of colonoscopies performed can be adjusted to meet local requirements. Currently a 100ng/ml is used as the positive cut-off point.

Cervical cancer screening

The last programme to be introduced was that of Cervical Cancer Screening, which was launched in March 2016. Cancer of the uterine cervix primarily affects younger women, with most cases appearing between the ages of 35 and 50. Based on this, the selected target group for screening included women aged 25-35, with a 3-year screening interval.

Cervical cytology is the current recommended standard test for cervix screening. Liquid based cytology is used locally as a method of testing. This is preferable to conventional cytology as it is associated with a lower proportion of unsatisfactory samples and ancillary testing, such as high-risk HPV testing in the case of ASC-US (atypical squamous cells of undetermined significance), can be performed on the same sample[11].

Cervical Cancer is one of the cancers which can be most effectiely controlled by screening. Detection of cytological abnormalities and subsequent treatment where abnormalities are high-grade, avoids the development of cancer. The International Agency for Research on Cancer (IARC) reports that cytology screening at population level every 3-5 years can reduce cervical cancer incidence up to 80%[12]. Until the end of 2018, over 7,200 Smear Tests were carried out as part of the National Screening Programme and 106 cases of low-grade squamous intra-epithelial lesion (LSIL), 32 cases of high-grade squamous intra-epithelial lesion (HSIL) and 4 cases of cervical cancer were identified.

The participation rate in the Cervical Cancer National Programme is low, with a 33% intention to participate amongst women invited to take part in the programme. However, the results from the European Health Interview Survey (EHIS) 2014/201513 are more encouraging with 74% of women reporting having carried out a cervical smear test at least once, whereas 50% report having carried out the smear test in the last 3 years.

This shows a consistent improvement in comparison to similar EHIS reporting carried out in 2008 and 2002, where the number of women who reported not having ever carried out a cervical smear test where 37% and 41% respectively. Results from the latest EHIS indicate that 81% of cervical screening is carried out in the private sector.

Who is invited to participate

Screening Programme	Target Population	Screening Test	Screening Interval
Breast	Women 50-68yrs of age *(YOB 1969 -1950)*	Mammogram	2 years
Cervical	Women 27-38yrs of age *(YOB 1991 – 1980)*	Pap Smear	3 years
Colorectal	Men & Women 55-69yrs of age *(YOB 1964-1949)*	Faecal immunochemical test (FIT)	2 years

Table 1. Overview of Screening Programmes in Malta, 2019

** YOB: Year of Birth*

Barriers to participation

Although people are now better informed and aware of various cancer issues, healthy asymptomatic people are not always ready to participate in Screening Programmes. During 2017 and 2018 the National Screening Centre took several actions to mitigate non-responsiveness including the sending of reminder letters, kits rather than invites being sent to previous participants as well as aggressive awareness campaigns. As a result, an increase in the participation rate was observed over the last 2-3 years from 45% to 54%.

In their national retrospective study carried out in 2015, Marmara et al.14, reported that a variety of factors that render non-attendees statistically significantly more likely. These included women with a lower family income, widowers, non-drivers, not having a breast, having no relatives or close friends with cancer, and who were less encouraged by a physician, being unsure of the screening frequency, more anxious and fearful. Perceived benefits, barriers, cues to action, self-efficacy and emotional representations were the most significant variables to describe the differences between lifetime attendees and non-attendees. Perceived barriers and cues to action were the strongest predictors for lifetime non-attendance14.

Similarly, Deguara M.15 in her 2016/7 survey on cervical cancer awareness reported that those who attended for screening regularly were more likely to be females with children or having had a close family member with cancer. The main reasons for nonattendance were embarrassment, fear of the test and fear of a bad result.

Whilst it is important that persons are well informed and make informed choices about participation in Screening Programmes, Health Care Professionals have a pivotal role in the success of our population-based Screening Programmes, empowering people to take ownership of their health and overcome any unfounded fears.

Conclusion

Over the past ten years Malta has introduced and operated three significant organised programmes to deliver cancer screening services to different groups of people in line with the European Council recommendation and current scientific evidence on efficacy, the balance between benefit and harm and cost-effectiveness. Programmes started with a small age cohort and are being gradually scaled up to included wider age ranges, increased frequency (where applicable) and also upgraded technology where indicated.

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