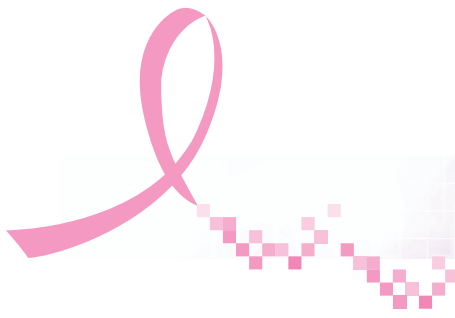# CHAPTER 1

PREVENTION AND EARLY DETECTION OF BREAST CANCER

CHAPTER 1
PREVENTION AND EARLY DETECTION OF BREAST CANCER

I. Introduction

1.1 It is well established that breast cancer is related to certain health factors and lifestyle behaviours. In this chapter, using the data collected on the demographics and socio-economic factors, lifestyle and health background from 4,820 Hong Kong breast cancer patients who were diagnosed since 2016 and recruited in Hong Kong Breast Cancer Registry (HKBCR), the distribution of these factors among patients in the local context is studied. Their breast screening habits, in particular, are also examined. These analyses aim to shed light on the causes of breast cancer in Hong Kong.

KEY FINDINGS

The patients recruited in HKBCR, according to their year of cancer diagnosis, were divided into three cohorts (2006-2010, 2011-2015 and 2016-current). This report focused on analysing the data of patients diagnosed since 2016, with supplementary comparisons between the cohorts to highlight the changes over the past decade in breast cancer status, diagnosis and management. For more detailed findings in the previous two cohorts, please refer to Report 11.

▶ The median age of patients in the 2016-current cohort was 55.0 years, which was two years older than that in the 2011-2015 cohort (median age: 52.8); and five years older than the 2006-2010 cohort (median age: 50.2).

▶ In line with the increase in medians, the proportion of patients aged between 30 and 39 decreased, while those aged 60 or above increased in the 2016-current cohort.

Risk factors

▶ The 10 most common risk factors of breast cancer are listed below, with the respective proportions of patients in the 2016-current cohort.

	Number	%
Lack of exercise (<3hrs / week)	3,693	76.6
No breastfeeding	3,150	65.4
Being overweight / obese	1,902	39.5
High level of stress (>50% of time)	1,703	35.3
No childbirth / first live birth after age 35	1,471	30.5
Family history of breast cancer	818	17.0
Early menarche (<12 years old)	693	14.4
Diet rich in meat / dairy products	654	13.6
Habit of drinking alcohol	336	7.0
Use of hormone replacement therapy	173	3.6

▶ Compared to the previous two cohorts, more patients had early menarche. They tended to give birth late or not having children. An increase in the proportion of habitual alcohol consumers was also found.

▶ Nearly half of the patients in the 2016-current cohort had physical exercise of less than three hours per week. Still, they were more active compared to their counterparts in the previous two cohorts, with nearly half of the patients reported that they "never" had any exercise habits.

Screening habits

► The overall patients' breast screening habits had improved throughout the cohorts, but were still poor. Regular mammography screening was undertaken by about 20% of patients in the 2016-current cohort, with less uptake in the older age groups. Similar trend was observed in breast ultrasonography screening.

► Compared to the previous two cohorts, more patients aged 50 or above opted for mammography screening, while there was an increase in the uptake of breast ultrasonography

screening among patients in the 2016-current cohort of all age groups.

► Similar to the patterns observed in the previous two cohorts, more uptakes of breast screening were found in patients living on Hong Kong Island, with higher education level and higher household income. However, there was a slight decrease in the uptake rate among patients living on Hong Kong Island and an increase among those living in Kowloon or the New Territories.

II. Demographics

A. Age at diagnosis

1.2 The age at diagnosis ranged from 21 to 104 with 56.9% of the patients aged between 40 and 59 (Figure 1.1) and the median was 55.0. It was also found that breast screening uptake decreased with age (Section IV below).
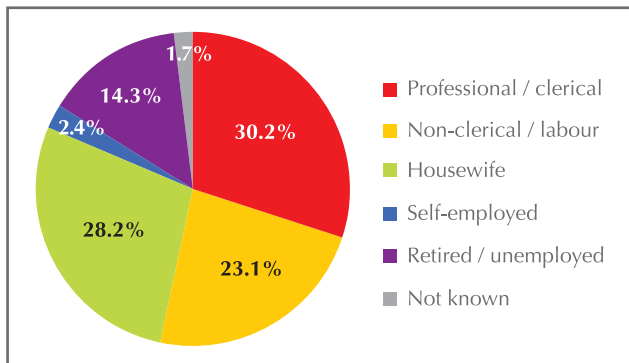
B. Occupation

1.3 Although international studies provided no evidence that occupation was related to breast cancer,[2] some studies suggested a certain degree of association between night shift and breast cancer.[3] There were arguments that night shift work interacted with chronotype and resulted in a disrupted circadian rhythm due to exposure to artificial light at night.[3, 4]

Figure 1.1: Distribution of age at diagnosis (N=20,057)

	<20*	20-29	30-39	40-49	50-59	60-69	70-79	≥ 80	Not known
2006-2010 (N=6,608)	0.0	0.8	10.2	37.4	31.7	12.9	4.6	1.3	1.0
2011-2015 (N=8,629)	<0.1	0.5	8.2	29.9	33.5	19.7	5.7	1.2	1.1
2016-current (N=4,820)	0.0	0.8	6.9	25.8	31.1	24.5	7.4	1.9	1.6

Age at diagnosis

* Only one patient belonged to the <20 age group in the 2011-2015 cohort.

Figure 1.2: Occupation of patient cohort (N=4,820)

Pie chart legend:
- Professional / clerical — 30.2%
- Non-clerical / labour — 23.1%
- Housewife — 28.2%
- Self-employed — 2.4%
- Retired / unemployed — 14.3%
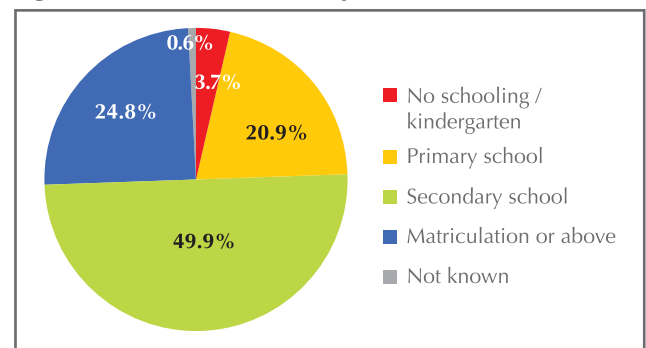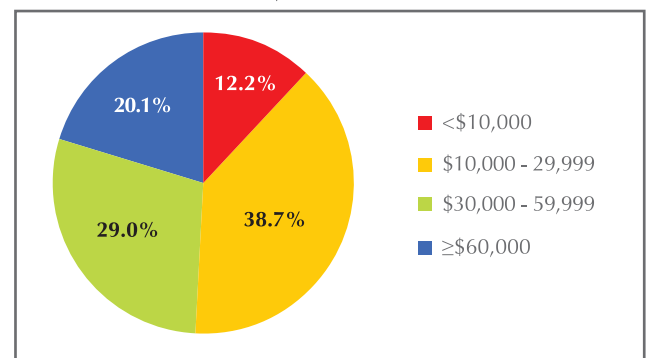- Not known — 1.7%

1.4 A local study found that the average working hours among women in the general population was 42.6 hours per week.[5] The findings of the Hong Kong Breast Cancer Foundation (HKBCF) were consistent with the finding of the local study. In this report, the median working hours was 45.0 per week among those who were employed prior to cancer diagnosis, which accounted for 55.7% of the patients in the cohort (Figure 1.2). Some of them (9.9%) had night shift duties and the median number of nights they worked in a year was 60.0.

C. Education level and monthly household income

1.5 Studies conducted in the Western countries found that lower education level and household income were associated with lower level of breast cancer awareness and less regular breast screening habits of women, even though they lived in the same city.[6-8] A study of the HKBCF produced similar findings.[9]

1.6 In this report, 74.7% of the patients attained secondary school level or above, while 24.6% only had primary school level or below (Figure 1.3). Patients who attained a lower education level were less likely to undergo regular breast screening than those with higher education levels (Section IV below).
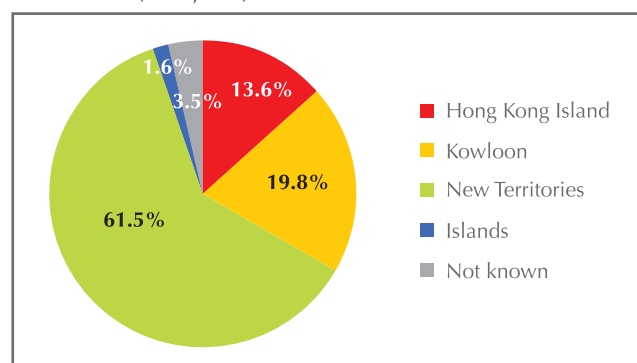
1.7 Among the patients who responded to the question on their income level, half (49.1%) of them had a monthly household income of $30,000 or above while 12.2% had less than $10,000 (Figure 1.4). Patients who had a lower monthly household income were less likely to undergo regular breast screening than those with higher income (Section IV below).

Figure 1.3: Education level of patient cohort (N=4,820)

Pie chart legend:
- No schooling / kindergarten — 0.6%
- Primary school — 20.9%
- Secondary school — 49.9%
- Matriculation or above — 24.8%
- Not known — 3.7%

Figure 1.4: Monthly household income (HK$) of patient cohort (N=2,287)

Pie chart legend:
- <$10,000 — 12.2%
- $10,000 - 29,999 — 38.7%
- $30,000 - 59,999 — 29.0%
- ≥$60,000 — 20.1%

D. District of residence

1.8 Of the patients, 61.5% resided in the New Territories. The respective proportions of those who resided in Kowloon and on Hong Kong Island were 19.8% and 13.6% (Figure 1.5). Patients living in the New Territories or Kowloon had less regular breast screening than those living on Hong Kong Island (Section IV below).

Figure 1.5: District of residence of patient cohort (N=4,820)

Figure 1.6: Bra band size of patient cohort (N=4,820)
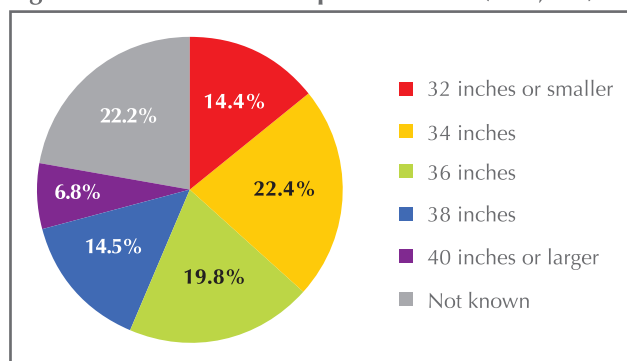
Figure 1.7: Bra cup size of patient cohort (N=4,820)

E. Bra band size and cup size

1.9 Some studies suggested that there was a certain degree of association between larger breast size and breast cancer.[10-12] A recent study found that the genetic correlation between body mass index (BMI) and breast size was positive while that between BMI and breast cancer risk was negative, in that genetic predisposition to high BMI was associated with larger breast size and a reduced risk of breast cancer.[13] Nonetheless, these studies were mainly conducted on women in Western countries and such findings may not be applicable to Asian women, whose breast size could not account for breast density[14] which has a role in breast cancer risk.[15]

1.10 In the patient cohort, the median bra band size was 36 inches and 27.4% of the patients were above median (Figure 1.6). For breast cup size, about half (47.7%) had cup B or smaller breasts while a small proportion (6.1%) had cup D or above (Figure 1.7).

III. Risk factors and health background

A. Tobacco smoking

1.11 The International Agency for Research on Cancer (IARC) has classified tobacco smoking as a probable cause of breast cancer.[3] A study found that in Hong Kong, 3.2% of women had daily smoking habit.[16] Although the relationship between active or passive smoking and breast cancer has yet to be established,[17] the HKBCF found that ex/current smoker had a higher breast cancer risk.[18]

1.12 In the cohort, 5.3% of the patients reported that they had smoked prior to cancer diagnosis, and among them, 52.7% were still smoking at diagnosis. The mean packs of cigarette consumed by current or ex-smokers who had quit smoking for less than a year was 3.8 per week in the preceding 12 months prior to cancer diagnosis.

B. Alcohol drinking

1.13 The World Health Organization (WHO) has classified alcohol consumption as Group 1 carcinogens for breast cancer for people of all ages.[3,19] The risk of breast cancer increases with the amount of alcohol consumed, i.e. for every 10g ethanol (one standard drink approximately equals to a 330ml can of beer or a 100ml glass of table wine or a 30ml glass of high strength spirit) consumed per day, the risk of breast cancer is increased by 10%.[19] A study found that in 2016, 10.4% of Hong Kong women in the general population drank alcoholic beverages at least once a week.[20]

1.14 Only 7.0% of the patients reported that they had been habitual alcohol consumers (i.e. consuming five alcoholic drinks or more in a 12-month period) at some point in their life and 47.0% of these patients were still drinking at diagnosis. Among those who had stopped drinking alcoholic beverages for less than a year or were still drinking alcohol habitually, the mean glasses of alcoholic beverages consumed was 5.7 per week in the preceding 12 months prior to cancer diagnosis. The two most commonly consumed alcoholic beverages were red wine (45.5%) and beer (39.3%).

C. Dietary and exercise habits and stress level

1.15 Most findings on the effect of dietary factors on breast cancer risk were inconclusive and inconsistent. However, a link between physical activity and prevention of postmenopausal breast cancer was found.[19] The HKBCF also found a negative association between physical exercise and breast cancer risk, in that working out for three hours or more per week would help reduce breast cancer risk not only among postmenopausal women but also among premenopausal women.[18]

1.16 About three-quarters (70.2%) of the patients had a balanced diet, while 13.6% ate a diet rich in meat or dairy product (Figure 1.8). About a quarter (23.0%) of the patients exercised three hours or more per week while 32.1% never exercised in the year prior to diagnosis (Figure 1.9).

1.17 Current studies on stress as a risk factor for breast cancer are non-conclusive and the subject requires further investigation. The HKBCF, nevertheless, found increased risk in women with a perceived high level of psychological stress, when it is measured at a global level with all possible stressors included.[18] In the cohort, 35.3% of the patients said that they had experienced high level of stress in the year prior to cancer diagnosis (Figure 1.10).

Figure 1.8: Dietary habits at diagnosis (N=4,820)

0.9%
13.6%
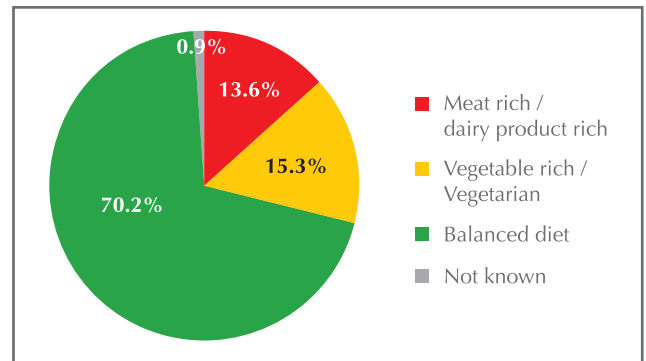15.3%
70.2%

- Meat rich / dairy product rich
- Vegetable rich / Vegetarian
- Balanced diet
- Not known

Figure 1.9: Exercise habits at diagnosis (N=4,820)

0.3%
23.0%
32.1%
44.5%

- Never
- <3 hours per week
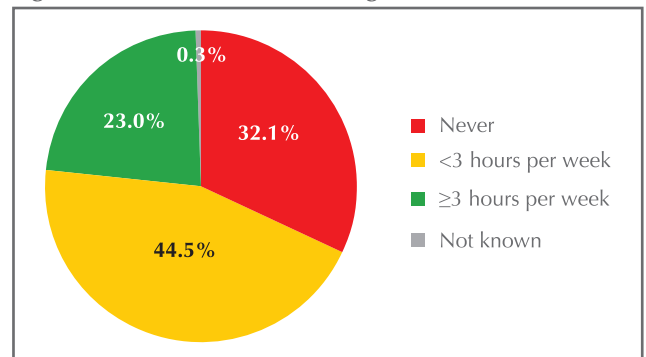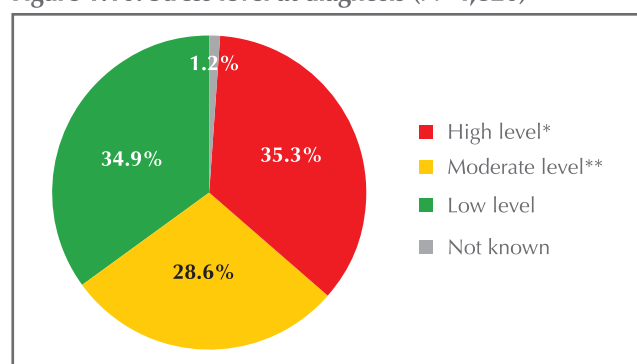- ≥3 hours per week
- Not known

Figure 1.10: Stress level at diagnosis (N=4,820)

* High level: defined as more than 50% of the time
** Moderate level: defined as 25%-50% of the time

D. Height, weight and body mass index

1.18   BMI is a heuristic method of estimating human body fat based on an individual's height and weight. It is calculated by dividing weight in kilograms by height in metres squared (kg/m^2). Overweight and obesity for Asian women were defined as having BMI of 23.0 to 24.9 and 25.0 or over respectively. Obesity is considered a risk factor for breast cancer.[18, 21] A study found that in 2016, 16.3% and 14.2% of Hong Kong women in the general population were classified as overweight and obese respectively.[22]

1.19   The average height and weight of the patients in the cohort were 157.9cm and 58.2kg, with 39.5% of the patients being overweight or obese (Table 1.1).

Table 1.1: Body mass index at diagnosis (N=4,820)

	Number	%
≥ 25.0 (Obese)	1,151	23.9
23.0-24.9 (Overweight)	751	15.6
18.5-22.9 (Normal weight)	1,885	39.1
< 18.5 (Underweight)	270	5.6
Not known	763	15.8

E. Family history of breast cancer

1.20   Breast cancer risk is found to be higher among women who have one first-degree relative with breast cancer, when compared to women with no first-degree relative with the disease. The risk is even higher among women having more first-degree relatives affected by breast cancer, or having relatives who are affected before the age of 50.[23, 24] The proportion of patients having family histories of breast cancer was 16.9% in this report (Table 1.2).

Table 1.2: Family history of breast cancer at diagnosis (N=4,820)

	Number	%
No	3,957	82.1
Yes with first-degree relative(s)	588	12.2
Yes with non first-degree relative(s) only	224	4.6
Yes but details not known	6	0.1
Family history not known	45	0.9

F. Personal history of other tumours

1.21   International studies and studies on Hong Kong Chinese cohort estimated that 5% to 10% of breast cancer patients are genetically predisposed.[25, 26] Breast cancer risk was higher in women with previous histories of germline-mutation-related types of cancer, including Hodgkin lymphoma, melanoma, lung adenocarcinoma, bowel cancer, uterine cancer, chronic lymphocytic leukaemia, or any type of cancer in childhood.[27-32] On the other hand, breast cancer risk was found to be lower in cervical squamous cell carcinoma survivors.[31, 32] In this report, 2.0% of the patients suffered from other types of malignant tumours prior to breast cancer diagnosis (Table 1.3). Among them, the most common tumour was uterine cancer (Table 1.4).

Table 1.3: Personal history of other tumours at diagnosis (N=4,820)

	Number	%
No	3,938	81.7
Benign tumour	731	15.2
Malignant tumour	94	2.0
Nature of previous tumours not known	11	0.2
History of tumours not known	46	1.0

Table 1.4: Origins of malignant tumours reported by patients (N=94)

	Number	%
Uterus	20	21.3
Colon / rectum	17	18.1
Thyroid	14	14.9
Ovary	7	7.4
Lung	6	6.4
Cervix	5	5.3
Small intestine	5	5.3
Lymphatic system	4	4.3
Nasopharynx	3	3.2
Kidney	2	2.1
Liver	2	2.1
Skin	2	2.1
Stomach	1	1.1
Muscle	1	1.1
Oral cavity	1	1.1
Gallbladder	1	1.1
Not known	7	7.4

Note: The total percentages may exceed 100 as multiple body parts may be involved.

G. History of benign breast disease

1.22 Several studies found that women with some types of benign breast disease would have an increased risk of breast cancer.[33] Benign breast disease can be classified into three categories: non-proliferative disease, proliferative disease without atypia, and proliferative disease with atypia. Non-proliferative diseases, such as fibroadenoma or other fibrocystic diseases, are generally not associated with increasing the risk of breast cancer.[33] On the other hand, proliferative diseases without atypia (e.g. papilloma and papillomatosis) and proliferative diseases with atypia [e.g. atypical ductal hyperplasia and lobular neoplasia, including atypical lobular hyperplasia and lobular carcinoma in situ (LCIS)] are linked to variably increased risk of breast cancer.[33]

1.23 In the cohort, 11.8% of the patients had previous history of benign breast disease. Fibroadenoma, which does not increase the risk of breast cancer, was most commonly found (51.1%). These patients neither suffered from atypical ductal hyperplasia nor LCIS prior to breast cancer diagnosis (Table 1.5).

Table 1.5: History of benign breast disease at diagnosis (N=4,820)

	Number	%
Have history of breast disease	**571**	**11.8**
Type of benign breast disease		
Fibroadenoma	292	51.1
Fibrocystic disease	79	13.8
Papilloma	8	1.4
Papillomatosis	1	0.2
Atypical ductal hyperplasia	0	0.0
Lobular carcinoma in situ	0	0.0
Others (Gynaecomastia, other benign tumours)	145	25.4
Not known	53	9.3

Note: The total percentages may exceed 100 as multiple types of benign breast disease may be reported.

H. Early menarche, late menopause and reproductive history

1.24 Life events such as early menarche (<12 years old), late natural menopause (> 55 years old), not bearing children, and late first pregnancy (>35 years old) all increase the lifetime exposure to the hormone estrogen, thus increasing the risk of breast cancer. On the other hand, late menarche, early menopause, bearing children, and early pregnancy all reduce the risk of breast cancer.[19]

1.25 The mean age at menarche of the patients was about 13 and 14.4% experienced early menarche. Of the patients, 58.9% were post-menopausal, and the average menopausal age was 50. Among them, a small proportion (5.4%) experienced late menopause. The proportion of patients being nulliparous were 25.4%. In addition, only a small proportion of patients (5.1%) had their first childbirth after the age of 35 (Table 1.6). Among those who experienced childbirth(s), 68.8% had two or more children (Table 1.7), and the mean age at which they had their first childbirth was about 27.

1.26 Breastfeeding is considered a protective factor against breast cancer at all ages.[18,19] One-third (33.8%) of the patients had breastfed their children and the mean total duration of breastfeeding was 13.7 months (Table 1.6).

Table 1.6: Menarche, menopause and reproductive history at diagnosis

	Number	%
Menarche (N=4,820)		
Early menarche (<12 years old)	693	14.4
Normal menarche (≥12 years old)	3,691	76.6
Age at menarche not known	436	9.0
Menopause (N=2,840)		
Late menopause (>55 years old)	152	5.4
Normal menopause (≤55 years old)	2,267	79.9
Age at menopause not known	421	14.8
Reproductive history (N=4,820)		
No childbirth	1,225	25.4
First childbirth at early age (≤ 35 years old)	3,205	66.5
First childbirth at late age (>35 years old)	246	5.1
Age at first live birth not known	114	2.4
Reproductive history not known	30	0.6
Breastfeeding (N=4,820)		
Yes	1,629	33.8
No (had childbirth)	1,922	39.9
No (no childbirth)	1,223	25.4
No (reproductive history not known)	5	0.1
Not known	41	0.9

Table 1.7: Number of live births reported by patients (N=3,565)

	Number	%
1	1,100	30.9
2	1,617	45.4
3	592	16.6
4	166	4.7
5 or more	75	2.1
Not known	15	0.4

Table 1.8: Use of hormonal contraceptives at diagnosis (N=4,820)

	Number	%
Non-user	3,553	73.7
OC use < 5 years	573	11.9
OC use 5-10 years	284	5.9
OC use > 10 years	103	2.1
Length of OC use not known	259	5.4
Not known if OC was used	48	1.0

OC: Hormonal contraceptives

I. Use of hormonal contraceptives

1.27 Hormonal contraceptives contain synthetic sex hormones. They are administered in the form of oral tablets, injections, implants and transdermal contraceptive patches. Although the IARC has classified current or recent use of combined estrogen-progestogen oral contraceptives as a risk factor for breast cancer, recent studies suggested discontinuing use for five to 10 years or 10 years or more resulted no excess risk compared to non-users.[3,34,35] Conflicting results were also obtained when studying the correlation between breast cancer risk and injectable contraceptives or implants.[36-40] Further investigation is therefore needed to ascertain the correlation between hormonal contraceptives and breast cancer risk.

1.28 The proportion of patients who had never used hormonal contraceptives was 73.7% (Table 1.8). Of the hormonal contraceptive users, 81.1% had already stopped using at diagnosis and the mean period for which they had stopped using was 19.7 years.

J. Use of hormone replacement therapy

1.29 Hormone replacement therapy (HRT) contains synthetic sex hormones and is used to relieve post-menopausal symptoms. The IARC has classified current use of combined estrogen-progestogen HRT for menopausal symptoms as a risk factor for breast cancer.[3] Of the post-menopausal patients, 4.0% had used HRT and only 2.0% had used it for over five years (Table 1.9).

Table 1.9: Use of hormone replacement therapy at diagnosis (N=2,840)

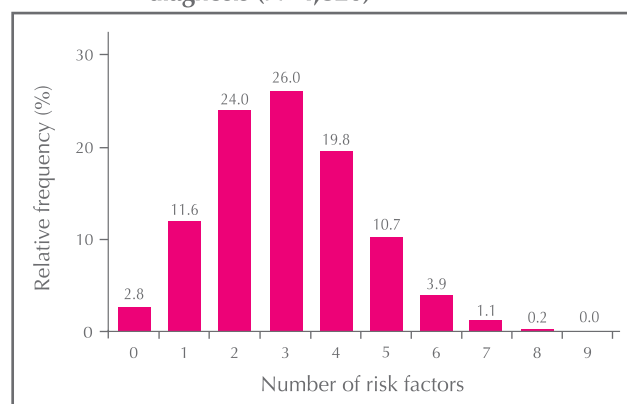|	Number	%
Non-user	2,687	94.6
HRT use < 5 years	56	2.0
HRT use 5-10 years	43	1.5
HRT use > 10 years	14	0.5
Length of HRT use not known	17	0.6
Not known if HRT was used	23	0.8

HRT: Hormone replacement therapy

K. Ten most common risk factors associated with breast cancer in Hong Kong

1.30 Among all the risk factors studied, 76.6% of the patients in the cohort exercised less than three hours a week; 65.4% did not have breastfeeding experience and 39.5% were overweight or obese (Table 1.10). The combination of multiple risk factors increases the risk of getting breast cancer, with one single factor (e.g. stress) increasing cancer risk by three-fold.[18] Of the patients, 61.7% had three or more risk factors, while 35.6% had one to two risk factors. Only a small proportion (2.8%) of the patients had none of the common risk factors studied (Figure 1.11).

Figure 1.11: Distribution of risk factors among patients at diagnosis (N=4,820)

Table 1.10: Ten most common risk factors for breast cancer in patient cohort (N=4,820)

	Number	%
Lack of exercise (<3hrs / week)	3,693	76.6
No breastfeeding	3,150	65.4
Being overweight / obese	1,902	39.5
High level of stress (>50% of time)	1,703	35.3
No childbirth / first live birth after age 35	1,471	30.5
Family history of breast cancer	818	17.0
Early menarche (<12 years old)	693	14.4
Diet rich in meat / dairy products	654	13.6
Habit of drinking alcohol	336	7.0
Use of hormone replacement therapy	173	3.6

IV. Breast screening habits

A. Breast screening methods

1.31 Breast screening is a method of checking woman's breasts when there are neither signs nor symptoms of breast cancer in an attempt to enable earlier detection. Early detection reduces mortality from breast cancer. The three screening methods used for breast cancer screening include breast self-examination (BSE), clinical breast examination (CBE) and mammography screening (MMG). BSE is done by the woman herself in that she checks for lumps, changes in size or shape of the breast, or any other changes in the breasts or underarm. CBE is conducted by a medical professional, such as a doctor or nurse, who uses his or her hands to feel for lumps or other changes. MMG is the current standard test for breast cancer screening which uses low-energy X-ray to examine a woman's breasts, while breast ultra sound screening (USG) could detect breast opacity using high-frequency sound waves.

1.32 The HKBCF recommends women aged 40 or above to perform monthly BSE as a measure of raising breast self-awareness, and also regularly undergo

CBE and MMG. In addition, USG is used along with MMG for women with dense breasts. There is no population-based breast screening programme in Hong Kong. The breast screening habits of the patients prior to cancer diagnosis studied in this report were self-initiated.

B. Breast screening habits and age

1.33 The breast screening habits of the patient were studied by age group (Table 1.11). For women of age 40 or above, the respective proportions who underwent regular BSE, MMG and USG were 21.1%, 19.6% and 18.5%. Regular CBE were performed by 33.7% of the patients aged below 60, but the proportions dropped for patients aged between 60 and 69 (25.4%) and those aged 70 or above (9.9%) (Table 1.11). With the exception of patients aged below 40, the proportion of patients who had never performed BSE or had never undergone CBE and USG was positively correlated with age. In addition, 62.5% of the patients aged 40 or above had never undergone MMG.

Table 1.11: Breast screening habits by age group (N=4,742)

	Age group, Number (%)				
	<40	40-49	50-59	60-69	≥70
BSE					
Never	148 (39.9)	400 (32.2)	522 (34.8)	490 (41.5)	252 (56.5)
Occasional	141 (38.0)	550 (44.2)	621 (41.4)	446 (37.8)	124 (27.8)
Monthly	80 (21.6)	283 (22.7)	339 (22.6)	235 (19.9)	66 (14.8)
Not known	2 (0.5)	11 (0.9)	18 (1.2)	10 (0.8)	4 (0.9)
CBE					
Never	218 (58.8)	545 (43.8)	671 (44.7)	620 (52.5)	331 (74.2)
Occasional	54 (14.6)	247 (19.9)	299 (19.9)	250 (21.2)	65 (14.6)
Regular*	97 (26.1)	439 (35.3)	515 (34.3)	300 (25.4)	44 (9.9)
Not known	2 (0.5)	13 (1.0)	15 (1.0)	11 (0.9)	6 (1.3)
MMG#					
Never	—	788 (63.3)	866 (57.7)	722 (61.1)	354 (79.4)
Occasional	—	207 (16.6)	258 (17.2)	219 (18.5)	55 (12.3)
Regular*	—	240 (19.3)	359 (23.9)	223 (18.9)	33 (7.4)
Not known	—	9 (0.7)	17 (1.1)	17 (1.4)	4 (0.9)
USG#					
Never	—	746 (60.0)	906 (60.4)	803 (68.0)	363 (81.4)
Occasional	—	207 (16.6)	246 (16.4)	190 (16.1)	49 (11.0)
Regular*	—	281 (22.6)	327 (21.8)	171 (14.5)	28 (6.3)
Not known	—	10 (0.8)	21 (1.4)	17 (1.4)	6 (1.3)

BSE: Breast self-examination; CBE: Clinical breast examination; MMG: Mammography screening; USG: Breast ultrasound screening
* "Regular" is defined as having the breast screening test every 1-3 years.   # Included patients aged 40 or above only

C. Breast screening habits and education level

1.34 Breast screening habits were further studied by patients' education level (Table 1.12). The findings suggested that patients who attained lower education level had undergone less breast screening prior to cancer diagnosis. In this report, 69.3% of the patients who attained kindergarten or less had never performed BSE, compared to 26.8% of the patients who attained matriculation level or above. The corresponding figures are 73.2% compared to 33.7% for CBE; 84.6% compared to 49.1% for MMG; and 87.0% compared to 46.5% for USG (Table 1.12).

Table 1.12: Breast screening habits by education level (N=4,789)

	Education level, Number (%)							
	No schooling / Kindergarten		Primary school		Secondary school		Matriculation or above	
BSE								
Never	124	(69.3)	477	(47.4)	901	(37.4)	321	(26.8)
Occasional	34	(19.0)	332	(33.0)	934	(38.8)	610	(51.0)
Monthly	21	(11.7)	190	(18.9)	550	(22.9)	248	(20.7)
Not known	0	(0.0)	7	(0.7)	22	(0.9)	18	(1.5)
CBE								
Never	131	(73.2)	642	(63.8)	1,222	(50.8)	403	(33.7)
Occasional	28	(15.6)	186	(18.5)	458	(19.0)	258	(21.6)
Regular*	20	(11.2)	172	(17.1)	708	(29.4)	515	(43.0)
Not known	0	(0.0)	6	(0.6)	19	(0.8)	21	(1.8)
MMG#								
Never	143	(84.6)	696	(70.6)	1,403	(62.9)	471	(49.1)
Occasional	18	(10.7)	155	(15.7)	378	(17.0)	185	(19.3)
Regular*	7	(4.1)	128	(13.0)	428	(19.2)	288	(30.0)
Not known	1	(0.6)	7	(0.7)	20	(0.9)	16	(1.7)
USG#								
Never	147	(87.0)	745	(75.6)	1,463	(65.6)	446	(46.5)
Occasional	17	(10.1)	135	(13.7)	340	(15.3)	196	(20.4)
Regular*	4	(2.4)	99	(10.0)	402	(18.0)	300	(31.3)
Not known	1	(0.6)	7	(0.7)	24	(1.1)	18	(1.9)

BSE: Breast self-examination; CBE: Clinical breast examination; MMG: Mammography screening; USG: Breast ultrasound screening
* "Regular" is defined as having the breast screening test every 1-3 years.
# Included patients aged 40 or above only

D. Breast screening habits and household income

1.35 Breast screening habits were also studied by patients' monthly household income level (Table 1.13). Patients who had lower income had undergone less breast screening prior to cancer diagnosis. Of the patients, 41.0% had monthly household income of less than $10,000 never performed BSE, compared to 22.8% of the patients who had income of $60,000 or more. The corresponding figures are 59.7% compared to 21.7% for CBE; 65.6% compared to 42.1% for MMG; and 72.5% compared to 41.8% for USG (Table 1.13).

Table 1.13: Breast screening habits by monthly household income (HK$) (N=2,287)

	Monthly household income (HK$), Number (%)							
	<10,000		10,000 – 29,999		30,000 – 59,999		≥ 60,000	
BSE								
Never	114	(41.0)	343	(38.7)	187	(28.2)	105	(22.8)
Occasional	111	(39.9)	330	(37.2)	332	(50.1)	258	(56.1)
Monthly	51	(18.3)	206	(23.3)	139	(21.0)	93	(20.2)
Not known	2	(0.7)	7	(0.8)	5	(0.8)	4	(0.9)
CBE								
Never	166	(59.7)	455	(51.4)	232	(35.0)	100	(21.7)
Occasional	48	(17.3)	151	(17.0)	129	(19.5)	119	(25.9)
Regular*	61	(21.9)	271	(30.6)	296	(44.6)	236	(51.3)
Not known	3	(1.1)	9	(1.0)	6	(0.9)	5	(1.1)
MMG#								
Never	172	(65.6)	491	(62.2)	273	(50.7)	170	(42.1)
Occasional	43	(16.4)	127	(16.1)	98	(18.2)	85	(21.0)
Regular*	43	(16.4)	162	(20.5)	161	(29.9)	148	(36.6)
Not known	4	(1.5)	10	(1.3)	6	(1.1)	1	(0.2)
USG#								
Never	190	(72.5)	510	(64.6)	263	(48.9)	169	(41.8)
Occasional	38	(14.5)	114	(14.4)	101	(18.8)	90	(22.3)
Regular*	29	(11.1)	154	(19.5)	170	(31.6)	141	(34.9)
Not known	5	(1.9)	12	(1.5)	4	(0.7)	4	(1.0)

BSE: Breast self-examination; CBE: Clinical breast examination; MMG: Mammography screening; USG: Breast ultrasound screening

* "Regular" is defined as having the breast screening test every 1-3 years.

Included patients aged 40 or above only

E. Breast screening habits and district of residence

1.36   Breast screening habits were further stratified by patients' district of residence (Table 1.14). A higher proportion (25.4%) of patients living in Kowloon or the New Territories had never undergone any breast screening (including BSE, CBE, MMG, and USG) than those living on Hong Kong Island (18.6%). In addition, a higher proportion (24.7%) of patients living on Hong Kong Island had regular MMG than those living in Kowloon (19.1%) and the New Territories (18.4%) (Table 1.14).

Table 1.14: Breast screening habits by district of residence (N=4,573)

| | District of residence, Number (%) | | |
	Hong Kong Island	Kowloon	New Territories
BSE			
Never	207 (31.6)	357 (37.4)	1,184 (40.0)
Occasional	305 (46.5)	417 (43.7)	1,091 (36.8)
Monthly	134 (20.4)	167 (17.5)	668 (22.6)
Not known	10 (1.5)	14 (1.5)	19 (0.6)
CBE			
Never	272 (41.5)	489 (51.2)	1,545 (52.2)
Occasional	125 (19.1)	198 (20.7)	553 (18.7)
Regular*	248 (37.8)	257 (26.9)	842 (28.4)
Not known	11 (1.7)	11 (1.2)	22 (0.7)
MMG#			
Never	323 (55.3)	550 (63.3)	1,743 (64.3)
Occasional	108 (18.5)	141 (16.2)	448 (16.5)
Regular*	144 (24.7)	166 (19.1)	499 (18.4)
Not known	9 (1.5)	12 (1.4)	20 (0.7)
USG#			
Never	319 (54.6)	561 (64.6)	1,818 (67.1)
Occasional	100 (17.1)	140 (16.1)	413 (15.2)
Regular*	156 (26.7)	157 (18.1)	451 (16.6)
Not known	9 (1.5)	11 (1.3)	28 (1.0)

BSE: Breast self-examination; CBE: Clinical breast examination; MMG: Mammography screening; USG: Breast ultrasound screening
* "Regular" is defined as having the breast screening test every 1-3 years.
# Included patients aged 40 or above only