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MEN'S AWARENESS OF BREAST CANCER RISKS

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ABSTRACT: Introduction: male breast cancer is a rare disease with increasing incidence, accounting for <1% of total breast cancer cases. Due to the rarity of the condition, research data is sparse and the condition is not fully understood; for this reason, data is extrapolated from female treatment pathways and implemented into care, but has shown lower efficacy rates in males. **Aims**: to increase awareness of breast cancer amongst men through the improvement of health literacy. **Methods**: a qualitative literature-review based discussion which aims to investigate the possible reasons for poor prognoses in males compared to females. A poster was developed as an awareness aid to be presented to 15 males to gauge their responses. **Results**: It was established from the literature that there is obvious poorer treatment response rate of male breast cancer compared to female breast cancers. For question-1, focus group fourteen participants agreed that the poster was an acceptable mean for education of which 57% were from Asian origin. For question-2, nine (Asian 4, white 3 and black 2) selected the 'strongly agree' option. For question-3 seven participants selected the "strongly agree" option with the majority were over 50 years 43% of those were Asian. In question-4, there was no obvious trend in either age or ethnicity. Analysis of the open comment section shown that the experience was positive (67%).**Conclusion**: More research is needed to establish male breast cancer specific data and enable male breast cancer to be identified as another type of breast cancer.

KEYWORDS: male breast cancer; risk factors, male cancer treatment, male cancer prognosis, cancer health literacy, cancer self-awareness, cancer self-checks.

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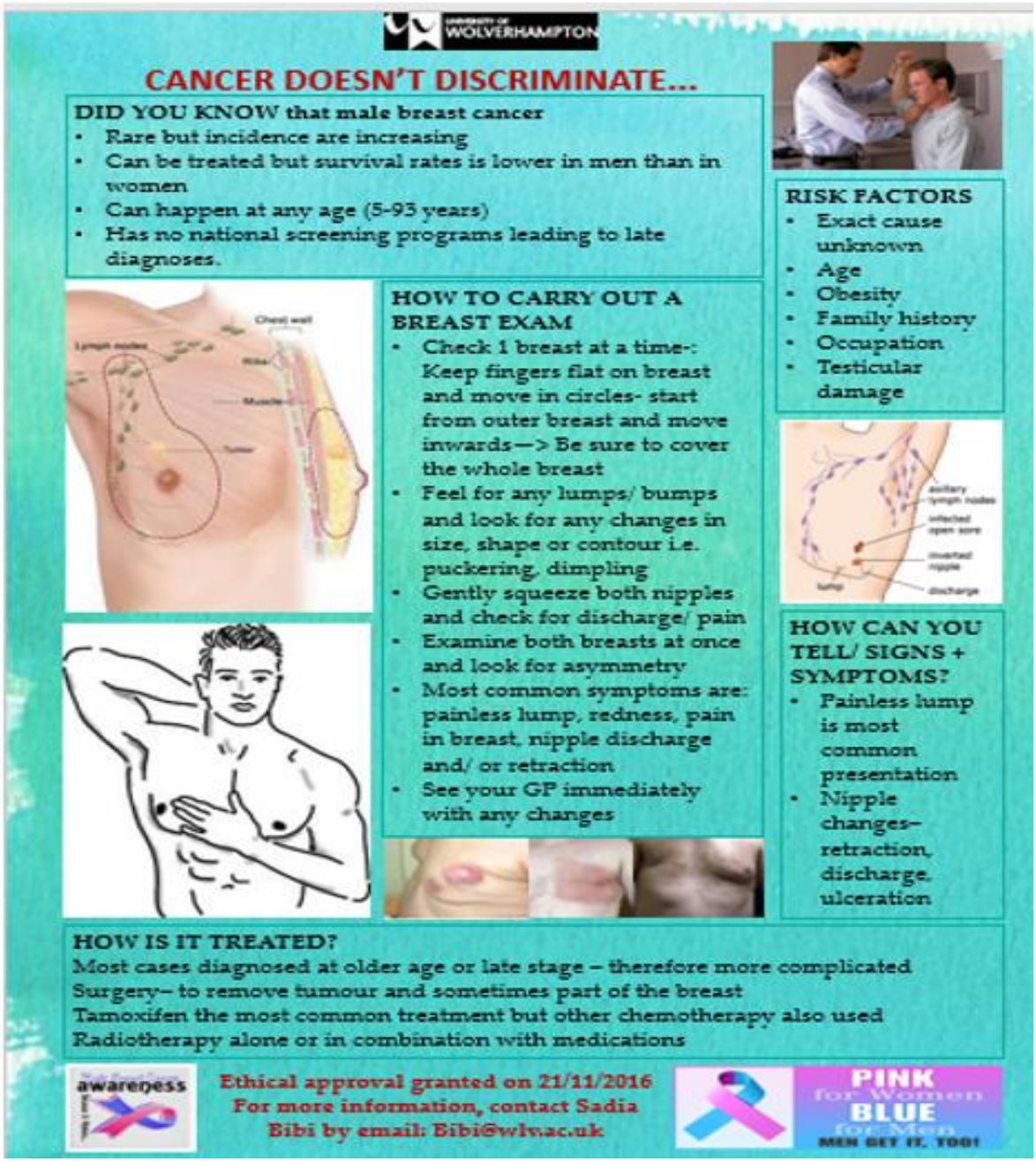
1.INTRODUCTION

Male breast cancer (MBC) is a rare disease with rising incidence. Due to the rarity of the condition, research has been very limited and studies which have been carried out had too few numbers to be statistically significant. Additionally, due to the lack of data gathered on the topic, some facts are still in question which keeps discussions limited. The samples used in this project have been subjected to this disadvantage, with many contradictory opinions from authors and thus, definitive conclusions could not be made. This project has analyzed current literature surrounding male breast cancer, and opinions of male focus group participants. Results have shown there is room for much improvement with regards to what is currently known about the disease, and in the techniques of improving poor survival rates. The focus group gave an idea of the true level of public unawareness of MBC, but on a positive note, there was also a willingness to learn more.

2. MATERIALS AND METHODS

This project was divided in to two main parts, part one took the form of a literature review which formed the basis of developing the poster to be used in part two to evaluate the education session. Part two was to present the poster to a group of males in a structured focus group. The aim of this project was to explore if males were aware of breast cancer in men and whether they were willing to participate in health education sessions on the topic to improve their knowledge (Figure 1). Ethical approval was granted by the University of Wolver Hampton ethics committee. The sample for part one of the project; was fifteen articles from which data was collated. The sample for part two was a convenience sample of fifteen males who consented to participate. Articles were included if they discussed MBC biology, diagnosis, treatment or prognosis. Search terms were used to narrow down the results, these included male breast cancer, survival, prognostic factors, therapy, treatment awareness and risk factors. The main databases used were science-direct, pub-med and academic scholar. The focus group recruitment ensured the target of two males from each of the three age groups (<30, 30-50 and >50 years of age). Invitees were of a range of demographics including race and employment type. Two focus groups were conducted**.**



3.RESULT AND DISCUSSION

Systematic Review of The Literature

The main comparators between the selected papers were the biology, diagnosis, risk factors, treatment and prognosis.

The Biological Difference Between Male and Female Breast Cancers

Male breast cancer (MBC) is rare accounting for less than 1% of all breast cancers cases [1]. Due to the rarity of the condition, research is sparse with many conflicting opinions; additionally, trials carried out have not had enough participants to be statistically or clinically significant. Most authors agreed that MBC and FBC are two separate entities and therefore need separate treatments, only Pettit et al. (2015) concluded that both diseases are biologically similar [2]. Margenthaler et al. (2010) considered whether treatment for MBC and FBC are the same because they are biologically similar

or whether treatment needs to be male-specific since they are biologically different [3]. Korsching et al. (2015) stated that the diseases differ as there are natural hormonal differences between the two sexes and thus the two diseases have different pathways [4]. Additionally, protein networks differ between MBC and FBC therefore findings from FBC cannot be extrapolated for male disease [4]. da Silva (2015) discussed how gender differences may affect patient toxic effects from therapies [5].It had been thought that the treatment pathway for post-menopausal women should be followed in MBC cases since MBC behaves in a similar way to post-menopausal women [6]. However, it was also argued that MBC is more closely related to pre-menopausal FBC rather than the post-menopausal FBC [2, 3, 7, 8]. Others thought that MBC appeared to have a more aggressive clinical behaviour entirely when compared to FBC [4, 9]. MBC and FBC both affect the breast so some similarities are bound to exist, for example, germ-line mutations in BRCA 1 and BRCA 2 genes are risk factors in both diseases but relative levels differ (mutations in BRCA1 in FBC increase BC risk by 55-65% but only 1-5% in MBC, and mutations in BRCA2 in FBC increase BC risk by 45% but only 5-10% in MBC), such that BRCA mutations are more common in females [10, 11]. Other genetic disparities also exist, either with difference in incidence between genders or complete absence of causal gene. Furthermore, THE authors [10, 11] reported that gene profiling results showed more than a thousand differentially expressed genes between MBC and FBC. MBC develops more commonly in males with underlying medical conditions which lead to increase the ratio of oestrogen to androgen levels in the body [6]. Studies showed there were a significantly higher number of aromatase- receptor- related genes up-regulated in MBC, suggesting the aromatase receptor has a large impact on MBC, contrary to what was reported by da Silva (2015); it may also be a potential cause of increasing endogenous oestrogen levels [5].It has been agreed that ductal carcinoma is the most common cancer sub-type in both male and female breast cancer with ductal carcinoma accounts for approximately 10% of MBC cases (average of 75% invasive) [7, 12, 13]. The ranges of histological subtypes for MBC and FBC relative distributions differ around the body [14] those subtypes are histologically different, but this has not been investigated sufficiently. It was reported that 9.8% of men had tumours measuring <1cm (20% in women), males were 1.6 times more likely to have lymph node involvement [12]. On the other hand, Bermejo et al. (2010) argued that there are no significant differences between tumour size and nodal involvement between the genders and although males have poorer prognoses, the clinical manifestation and histopathological characteristics may not show obvious differences [15].The current body of knowledge doesn't allow solid conclusions to be made, but sufficient evidence exists to accept that there are some biological differences between the two diseases.

Risk Factors

The exact aetiology of MBC is unknown. da Silva (2015) stated that family history, BRCA1 + 2 mutations, and high levels of circulating oestrogens are strong risk factors for both MBC and FBC; however, males have additional strong risk factors including- klinefelters syndrome, oestrogen/

testosterone intake, orchitis and epididymitis [5]. Popovic & Popovic (2016) reported that whilst Caucasian race confers greater risk over Afro-Caribbean's for FBC, the reverse is true for MBC which is more common in black men; the reason for this difference is unknown [16]. Breast cancer is considered by men to be a female only disease [5, 17]. There are currently no support groups available for MBC patients [17].

The Difficulty In Early Diagnosis Of Male Breast Cancer

MBC is typically diagnosed at an older age and later stage, compared to FBC, the mean age of diagnosis in males is 67 compared to 62 years in females [3, 18]. Russo et al. (2010) reported that 40% of MBC patients present with stages 3 and 4 tumours; this is often due to early chest wall spread and scarcity of male parenchyma [13]. Low awareness can be attributed to by both patients and healthcare professionals delayed recognition of the possibility of MBC diagnosis, by up to 10 months [8]. only ultrasonography and fine needle aspiration or core biopsy can be used as MBC diagnostic pathways; mammography is not possible [5].MBC tumour is commonly located in the central- sub-areolar, where FBC is usually in the upper outer quadrant [5]. The most common presentation of MBC is a painless, discrete mass; with nipple involvement, retraction, discharge, ulceration and breast asymmetry [5].Currently, there are many campaigns encouraging females to carry out self-breast checks and educating them on signs to look out for; however, males are not included.

Current Treatment

Data surrounding MBC treatment is limited and full of contradictory arguments between using female- centric pathways or developing a males' unique treatment pathway. The anti-oestrogen tamoxifen has been reported as first line therapy in males as it has efficacy at all stages of oestrogen positive breast cancers; but its use in the male setting attracted mixed opinions [5, 8]. The duration of use is five to ten years in females but a maximum of three years in MBC due to its side effect profile (loss of libido and erectile dysfunction) [5, 8]. The use of aromatase inhibitors is limited for those who cannot tolerate tamoxifen due to allergies or side effects, however, authors argued their effectiveness in MBC with 1.5- times higher mortality rates compared to tamoxifen as monotherapy and positive outcomes when used as combination therapy [5, 8]. Conversely, clear benefits were seen with use of aromatase inhibitors in post-menopausal female patients [5, 8]. The same problem exists with the use of radiation therapy- some authors report high success rates in MBC [5, 8] and is likely to prevent local recurrences in males; however, overall survival is not prolonged.

Prognosis : Fentiman (2016) reported median overall survival as 7 years for MBC versus 9.8 years for FBC, also, there was no statistically significant difference in median survival for patients with stages 3 and 4 diseases [11]. Russo et al. (2010) has reported varied incidences between geographical areas and ethnic groups, where Winer & Ruddy (2013) reported socio-demographic predictors of prognosis are evident with black men living in non-metropolitan areas. It is possible that poor prognosis in MBC is gender and management related [17].

Focus Group Results

Most participants (n=14) agreed that the poster was an acceptable mean for education, with 80% of participants under the age of 30 selected "strongly agree" option compared to 20% in 30-50 age group and 40% in those above the age of 50 years. When the response compared by ethnicity the majority n=7) who selected "strongly agree" were Asian (57%) and white (43%) and 27% of all participants (all were Black) selected the "agree" option no one either by age or ethnicity selected the "strongly disagree" option and one person (white, over the age of 50) selected the "disagree" option.

The second question examined if participants' knowledge improved after attending the presentation. Most participants (n=9, Asian 4, white 3 and black 2) selected the 'strongly agree' option with the same participant as per question 1 selected the "disagree" option. The next question analysed the quality of information included in the poster; results showed that seven participants selected the "strongly agree" option with the majority above the age of 50 years (43%) Asian and the reminder (n=8) selected the "agree" option with the majority was under the age of 50 years (75%) white (Table 1). Question four showed results for the acceptability of the method of presenting, in particular- pitch, tone and understandability. There were no obvious trends in either age or ethnicity and relative levels seemed similar.

Table 1 – education focus group results

	Strongly agree	Agree	Disagree	Strongly disagree
Questions by age group				
Question 1				
Under the age of 30 years	4	1	0	0
30-50 years	1	4	0	0
Over the age of 50 years	2	2	1	0
Question 2				
Under the age of 30 years	3	2	0	0
30-50 years	3	2	0	0
Over the age of 50 years	3	1	1	0
Question 3				
Under the age of 30 years	2	3	0	0
30-50 years	2	3	0	0
Over the age of 50 years	3	2	0	0
Question 4				
Under the age of 30 years	3	2	0	0
30-50 years	2	3	0	0
Over the age of 50 years	3	2	0	0
Question by ethnicity				

Question 1				
Asian	4	1	0	0
Black	0	4	0	0
White	3	2	1	0
Question 2				
Asian	4	1	0	0
Black	2	2	0	0
White	3	2	1	0
Question 3				
Asian	4	1	0	0
Black	1	3	0	0
White	2	4	0	0
Question 4				
Asian	3	2	0	0
Black	2	2	0	0
White	3	3	0	0

Analysis of the open comment section shown that the experience was positive (67%) but may require some further development (33%) which is encouraging to carry out further focus group to raise awareness of MBC.

Limitations

Due to the rare nature of MBC, the existing research is limited and the specific topic of this project further narrowed the range of data that could be used; thus, the sample size of the literature review was comparatively small.

4. CONCLUSION

Male breast cancer is a rare condition with increasing incidence. Data around this condition are limited and opinions are conflicting, however, majority of authors seem to agree males appear to have worse outcomes than females with the biological, risk factors and lack of awareness by males of the disease as the major contributors. Poor awareness by healthcare professionals and patients have led to delays in diagnosis by up to 10 months. MBC requires much more research to develop male breast cancer unique guidelines and treatment pathways.

Place of current work in existing literature: MBC is a rare condition with limited research have been carried out in the area, hence, any data which adds to the current bank of knowledge would only be beneficial in that it further substantiates work that has already been carried out through analysis by an impartial party.

Originality: This is the first study conducted in the pharmacy undergraduate population in the UK. For the results to be significant larger scale study needs to take place in more than just two universities.

CONFLICT OF INTEREST: Nil

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