

Table 2. Prevalence by assessment tools and inter-rater reliability.

		Prevalence		
Clinical diagnosis	Self-reported symptoms	Arm circumference	Cumulative	
n=33 (6.5%)	n=83 (16.2%)	n=92 (18.0%)	154 (30.1%)	
Clinical diagnosis of BCRL				
Self-reported symptoms	Yes	No	Percent agreement 407/479 (85.0%); Kappa 0.3188; P<0.001	
Yes	24	59	Sensitivity 24/33 (72.7%)	
No	9	383	Specificity 383/446 (88.5%)	
Clinical diagnosis of BCRL				
Arm circumference >2 cm	Yes	No	Percent agreement 388/478 (81.1%); Kappa 0.192; P<0.001	
Yes	19	73	Sensitivity 19/33 (57.6%)	
No	14	369	Specificity 369/445 (82.9%)	

BCRL: breast cancer-related lymphedema

DISCUSSION

Local prevalence rates are comparable to internationally observed data despite higher rates of mastectomy and axillary dissection

This study highlighted the prevalence rates of BCRL in a single tertiary breast unit with an established lymphedema surveillance strategy. Comparable to other studies in our literature review, the prevalence of BCRL was estimated to be less than a third of the cohort (6.5–30.8%).^{3–12} This was lower than expected despite the cohort having a higher rate of mastectomy and axillary clearance performed (>50%). These risk factors were hypothesised to contribute to the rates of BCRL due to their extent of surgical disruption of the draining lymphatics.^{10,12} The proportion of breast surgery performed was at least reflective of the practice in Singapore and other Southeast Asian countries in the last decade, whereby rates of mastectomy with or without axillary dissection may be higher due to reasons such as breast cancer being diagnosed at a more advanced stage, and psychosocial reasons such as fear of cancer relapse, perception that health is more important than breast retention, possibility of involved margins.^{13–17}

However, breast surgery has seen a trend of de-escalating axillary treatment aimed at producing equivalent survival outcomes and omitting previously routine surgical therapies such as axillary lymph node dissection or radiation in select group.^{18–22} This is expected to further improve arm morbidities outcome assessment such as BCRL and shoulder dysfunctions. The rates of BCRL will continue to form an important part of performance

indicators of any contemporary breast unit. This study is therefore important to set a benchmark for prevalence rates not only as a cumulative rate, but identify the relative risk of BCRL associated with various treatment and risk factors.

Differentiating clinical BCRL from other causes

The result demonstrated variation in the estimation of prevalence of BCRL depending on the type of assessment tools used. Patient-reported BCRL was higher compared to clinician-diagnosed BCRL. However, the latter also represented the most clinically significant BCRL requiring interventions that were not due to other medical causes. Clinical surveillance post-cancer treatment was aimed at excluding disease recurrences, and other breast cancer treatment-related morbidities that could also impair functional outcomes and quality of life. This required clinicians to take into account patients' underlying risk factors and potential competing diagnosis. Patient-subjective complaints of shoulder dysfunction or altered limb sensation may be caused by common conditions such as frozen shoulder or adhesive capsulitis, carpal tunnel syndrome, tenosynovitis.^{23,24} Other contributing conditions such as chemotherapy-induced peripheral neuropathy (CIPN), aromatase inhibitor-induced musculoskeletal syndrome (AIMS), radiation-induced fibrosis, axillary cording syndrome may often co-exist (Fig. 1).^{25–30} Similarly, arm swelling could be due to other causes such as fluid overload, venous disorders or disease recurrence. These should be excluded with the relevant tests. Rates of BCRL by patients' reporting may therefore be an overestimation due to any of these confounding factors.^{30,31}