The projected burden of knee osteoarthritis in New Zealand: healthcare expenditure and total joint provision

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We commend Wilson and Abbott on their paper highlighting the projected burden of knee osteoarthritis in New Zealand.1 Their projections are worrying and match our previous findings.2–4 However, we have concerns regarding the accuracy of their figures, the clinical implications and their conclusions. They underestimate the demand as the model does not allow for patients who need bilateral TKR and does not appear to include unicompartmental replacement (UKR), which is also performed for knee OA.

In 2013, 7,419 knee replacements were performed in New Zealand (6,694 TKR and 725 UKR), of which osteoarthritis was the diagnosis of 95%.5 Therefore, the baseline number performed for OA was 7,048 rather than 5,070 used in their model. By 2017 there were 9,352 knee replacements (8,298 TKR and 1,054 UKR), so the burden for OA of approximately 8,884 is already well in excess of 5,770 in their model. It has already surpassed the 8,613 projected by Hooper et al for 20262 and is fast approaching the projections of Wilson and Abbott for 2038. The numbers performed in 2017 were 54% higher than Wilson and Abbott’s estimate, so extrapolating from this the total burden could approach 14,000 TKR/UKR annually by 2038 or an increase of almost 7,000 from 2013.

They also modeled the effect of rising rates of obesity on projected numbers of patients needing TKR. Obesity has a major impact on a wide range of other orthopaedic conditions. Procedures are more complex, take longer and have higher complication rates. We fully concur with their conclusion that public health measures are needed to reduce population obesity rates. However, there will be a lead time of many years before we are likely to see any effect on demand for TKR.

While they state in their introduction that there are capacity constraints, they do not expand on this in the discussion. The average orthopaedic surgeon in New Zealand performs 36 TKR per year. This increases to 41 per year if UKR is also included.1 To perform the additional 4,000 procedures predicted by Wilson and Abbott would potentially need a further 100 orthopaedic surgeons or an increase of 50% on the 206 surgeons who performed knee arthroplasty in 2013. In addition, there will be a need for more supporting staff (anaesthetists, nurses, physiotherapists, etc) and infrastructure (beds, operating facilities and surgical time).

In the discussion they state that “effective, low cost, early interventions such as exercise therapy, can alleviate symptoms, improve quality of life and reduce the need for costly treatment, such as TKR, later in the disease course.” They conclude that without these changes the number of TKRs will increase by 4,000 by 2038 with a subsequent increase in the fiscal burden.

We agree that a more coordinated approach and effective non-operative treatment, including exercise therapy, has an important role in all patients with knee OA. However, the two papers they cite add...
little to support the statement that TKR can be reduced in New Zealand by non-operative measures. The study by Teoh et al.6 is from Australia, which has a very different healthcare system and access thresholds to New Zealand. The MOA study from New Zealand only has follow-up to two years by which time 35% of patients had already undergone hip or knee replacement.7 A recent study has shown that it may be possible to delay surgery for five years in up to 50% of patients who initially did not qualify for TKR with an individualised non-operative programme.8 However, while they avoided surgery, they had no clinically relevant improvement.

Exercise therapy may be cost-effective in the short term, but TKR, while expensive up front, has been shown to be highly cost-effective with gains lasting many years.9 The 18-year survival of a TKR in New Zealand is 92.3%, so for the majority of patients it is one procedure that will last their lifetime.5 The healthcare burden of knee OA and other musculoskeletal conditions will continue to grow. Robust modeling is important to help inform long-term funding decisions but should include a clinical perspective in order to be relevant and credible. Public health initiatives to reduce obesity are essential but the demand for TKR will continue to rise. We need to plan for this from both economic and workforce training perspectives. Unless adequate provision is made for TKR, the inevitable consequence will be rising threshold scores for publicly funded surgery, explicit rationing and increasing numbers of patients being declined surgery.4

Competing interests:
Nil.

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