

# Operating Efficiently: Fixing the market for surgical equipment in low and middle income countries.

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## BACKGROUND

Five billion people lack access to safe and timely surgery and the need is greatest in low and middle income countries (LMICs). This is partly due to a lack of surgical staff but lack of equipment is a contributing factor.

- 55% of district hospitals surveyed across eight African countries did not have an anaesthetic machine.
- 70% of operating rooms in parts of sub-Saharan Africa have no pulse oximeter.

The same day cancellation rate is estimated to be 30 % in LMICs . It could be reduced if the issues of supplies and equipment were addressed.

- A study of a large Tanzanian hospital attributed 28% of cancellations due to lack of equipment and supplies.

## WHY IS THIS IMPORTANT?

- Patients are placed at avoidable risk - Lack of monitoring and anaesthetic equipment leads to higher perioperative mortality.
- Surgeons can not work efficiently - Poor use of limited staff when equipment shortages lead to operations being cancelled.
- It causes treatment delays.

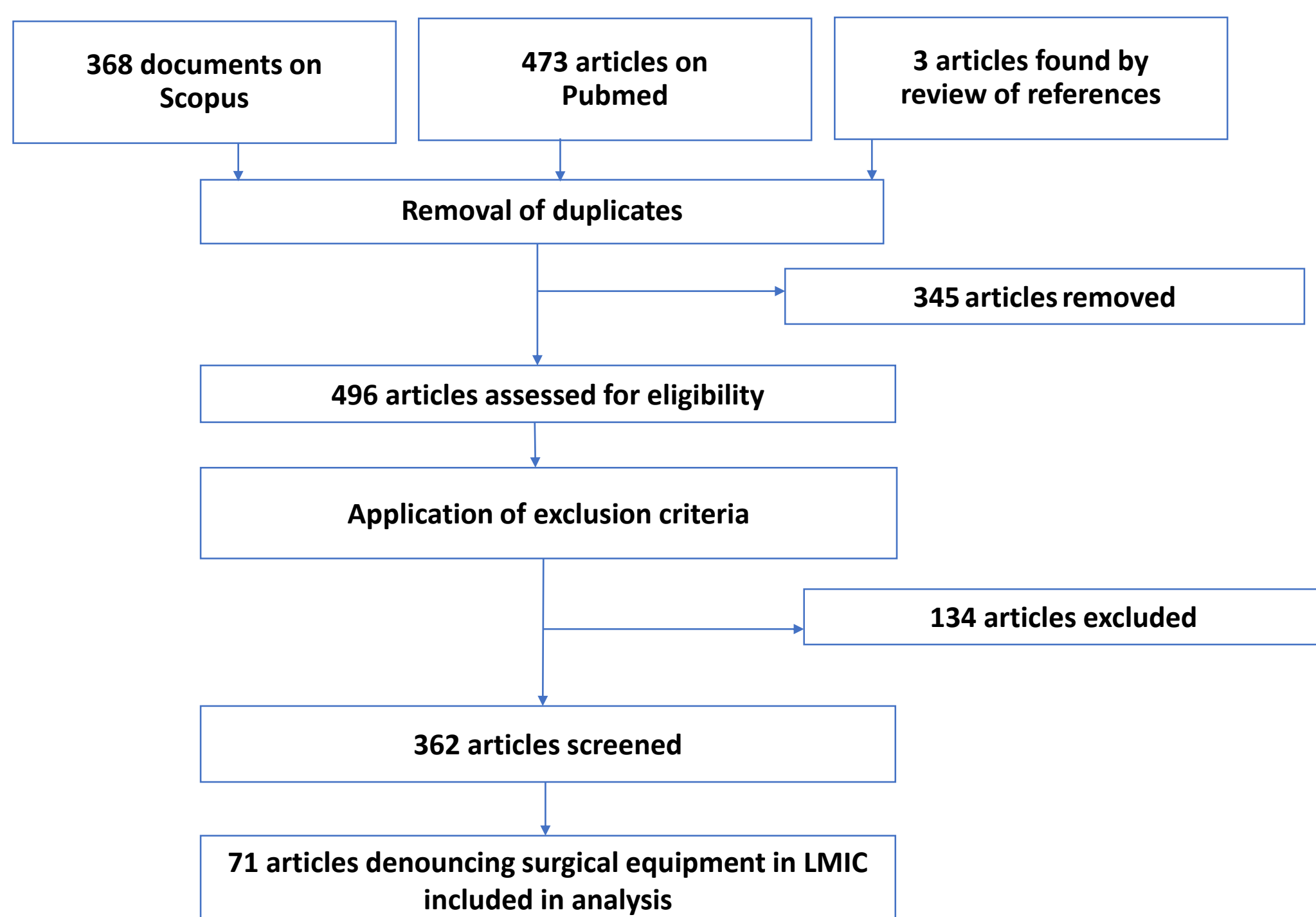
## RESEARCH QUESTION

*What are the problems with access to surgical equipment in LMICs and can they can be addressed using the approach taken to successfully increase access to HIV anti-retroviral drugs?*

## METHODS

A systematic literature review of surgical equipment in LMICs was conducted using PubMed and Scopus databases.

Thematic analysis of resultant papers.



## MARKET FAILURES

Analysis showed many problems with acquiring equipment are due failures in the market in LMICs.

In addition, there is a problem of inappropriate equipment, including broken and inappropriate donations for the LMIC environment; and with servicing available equipment.

<b>Supply Side</b>	<ul style="list-style-type: none"> <li>• Prohibitive expense of new equipment.</li> <li>• Lack of context specific equipment.</li> </ul>	<ul style="list-style-type: none"> <li>• Internationally manufactured equipment targeted at HIC costumers.</li> <li>• Poor purchasing power of facilities and states does not incentivise market innovation.</li> </ul>
<b>Demand side</b>	<ul style="list-style-type: none"> <li>• Small fragmented markets due to low demand from low numbers of participants across different countries.</li> <li>• Purchasing on credit led to inflated prices.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of financing leads to an inability to pay for equipment and low number of viable customers</li> <li>• Poor administrative capacity to assess needs and manage stock leads to infrequent orders.</li> <li>• Lack of funding leads to credit purchasing and default risk which suppliers cover by charging higher prices</li> </ul>
<b>Other/Post Market</b>	<ul style="list-style-type: none"> <li>• Equipment in disrepair.</li> <li>• Long and unpredictable waits for arrival of supplies.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited capacity for maintenance or repair.</li> <li>• Unreliable supply chains, limited local manufacture means equipment travels long distances.</li> </ul>

## SOLUTIONS

<b>Situational assessment &amp; Forecasting demand</b>	<ul style="list-style-type: none"> <li>• Assess current situation regarding available equipment, deficits and needs. Forecast demand for equipment as services are scaled up.</li> <li>• Similar to assessments of HIV/AIDS health facilities, professionals and number of patients and drug demand.</li> </ul>
<b>Aggregating demand &amp; Price negotiation</b>	<ul style="list-style-type: none"> <li>• Aggregated across time as well as facilities and countries. Bulk and multiyear orders enable price negotiation.</li> <li>• Suppliers are assured of volume of orders and therefore exploit economies of scale to lower costs.</li> </ul>
<b>Procurement &amp; Local capacity building</b>	<ul style="list-style-type: none"> <li>• Tendering, organising and choosing suppliers based on defined criteria and agreeing terms after a competitive process is required. Ensures competitively priced, affordable goods that meet requirements.</li> <li>• Working with and training local people to increase their ability to organise the multiple phases in procurement.</li> </ul>
<b>Organising finance</b>	<ul style="list-style-type: none"> <li>• Arrange and secure financing, as for in country HIV/AIDS programmes, would lead to reliable funds for equipment purchase and/or repair. Financing can be a blend of funding, including own country financing as well as NGO.</li> </ul>
<b>Supply chain management</b>	<ul style="list-style-type: none"> <li>• Devices and equipment are manufactured internationally, management of the supply chain up and downstream of the point of entry is important to achieve the reliable supply of goods.</li> </ul>
<b>Encouraging innovation</b>	<ul style="list-style-type: none"> <li>• Identify unmet need for LMIC specific equipment and stabilise the market by ensuring the demand.</li> <li>• Engage financing and industry stakeholders.</li> </ul>