How Do Implant Costs Impact Access to Pediatric Spinal Deformity Surgery? An International Survey of Spine Surgeons

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Disclosures

- Neither author has relevant COI or disclosures related to this study.

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Background

- The burden of expensive pedicle screws may restrict access to surgical care

- This study investigated how implant costs impact access to pediatric spinal deformity surgery (PSDS) globally

Methods

- A 28-item survey was developed on RedCap
- SRS members or published international spine surgeons were queried regarding the following
  - costs of pedicle screws
  - patient characteristics
  - cost reduction strategies
  - barriers to PSDS in their countries

Methods

- Two cohorts were created
  - World Bank classification of "high income country" (HIC) (gross national income per capita (GNIPC) >$12,616) vs "low income country" (LIC)

- Statistical analysis utilized
  - T-tests for continuous variables
  - Chi-square for categorical data (alpha level <0.05)
  - Multivariate regression analysis to correlate implant costs as a function of GNIPC

Methods

- Implant costs were stratified between local & international manufactures.

- Local Manufacturers
  - Physician owned or start-up entities that only market implants locally or regionally

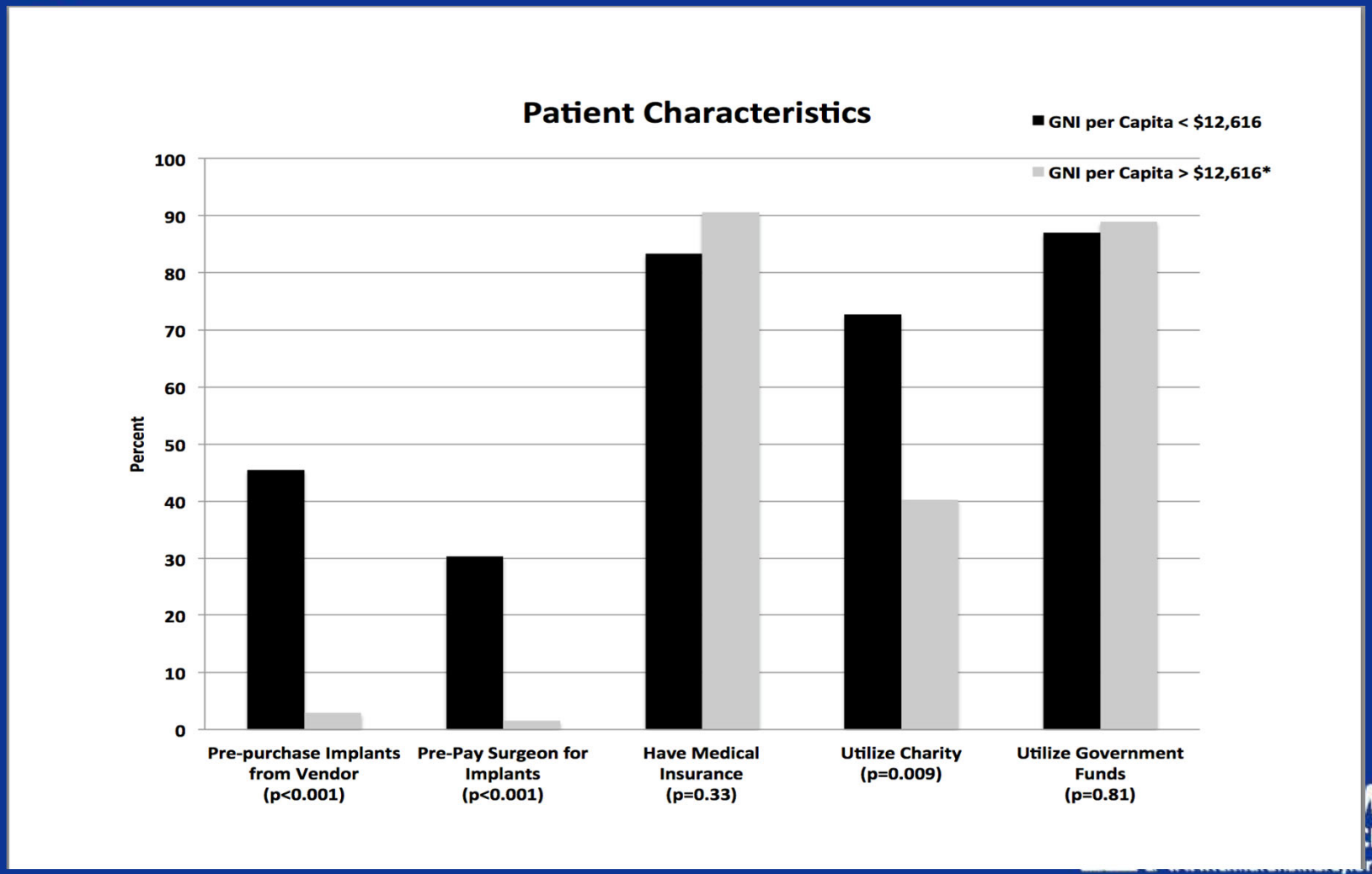
Results

- Surveys were electronically sent to 441 pediatric spine surgeons in 58 countries

- 95 surgeons (21.5%) from 36 countries responded, with 70 (73.7%) surgeons from HICs & 25 (26.3%) from LICs
  - 34 US Surgeons

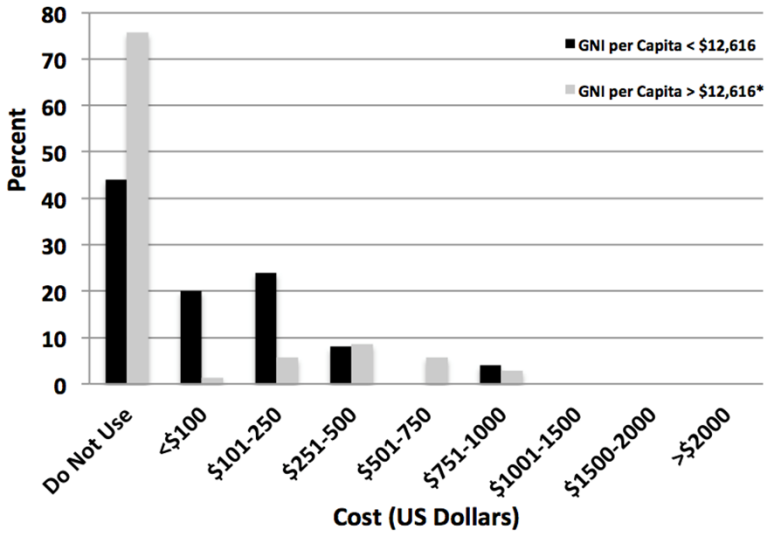
Results

- Surgeons from LICs performed a greater annual number of pediatric deformity cases than the HIC cohort (83 vs 56, p=0.05)

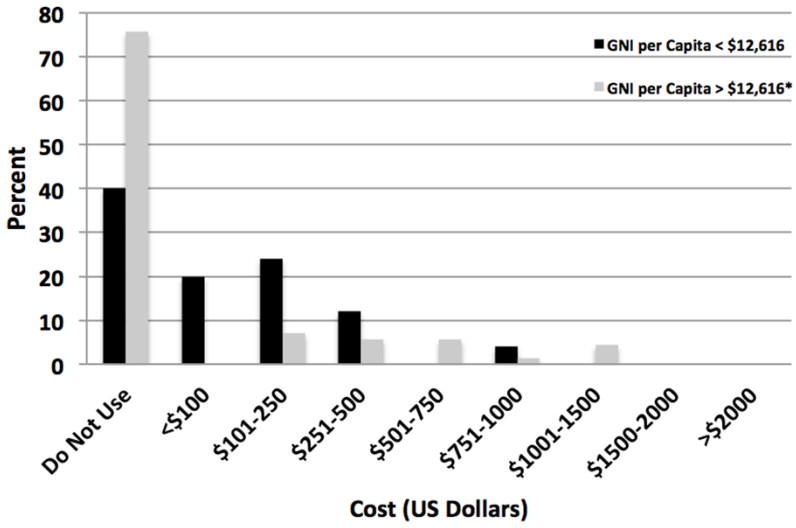


Results

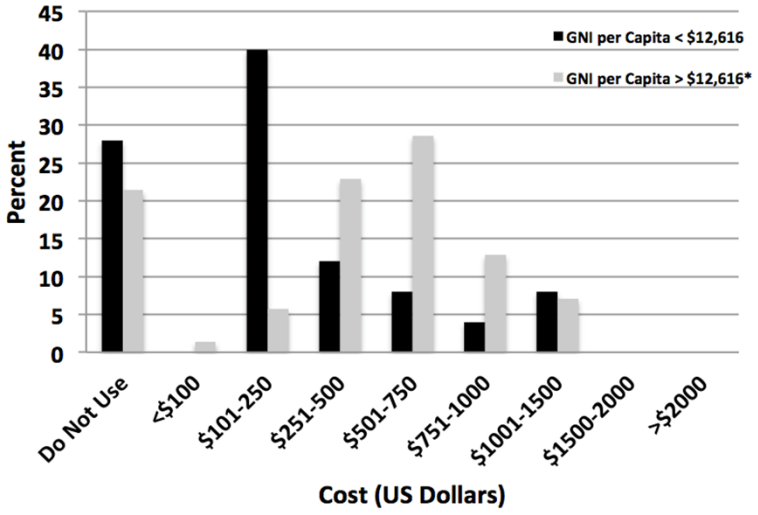
Locally Manufactured Monoaxial Screws



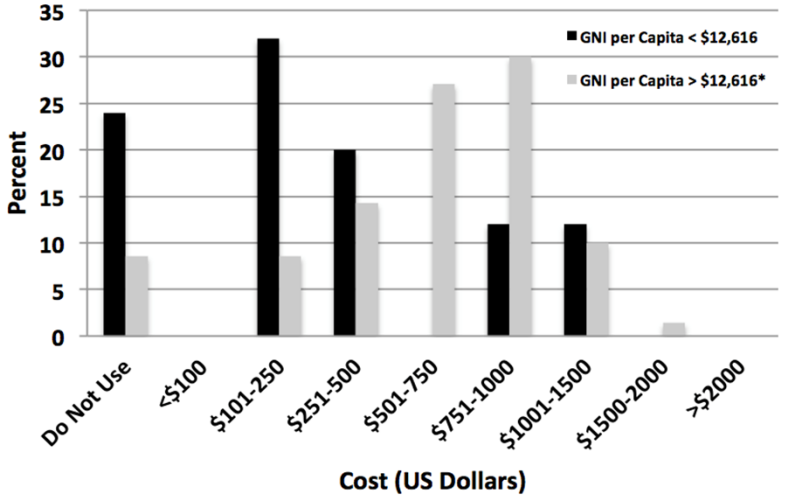
Local Manufactured Polyaxial/Uniaxial Screws



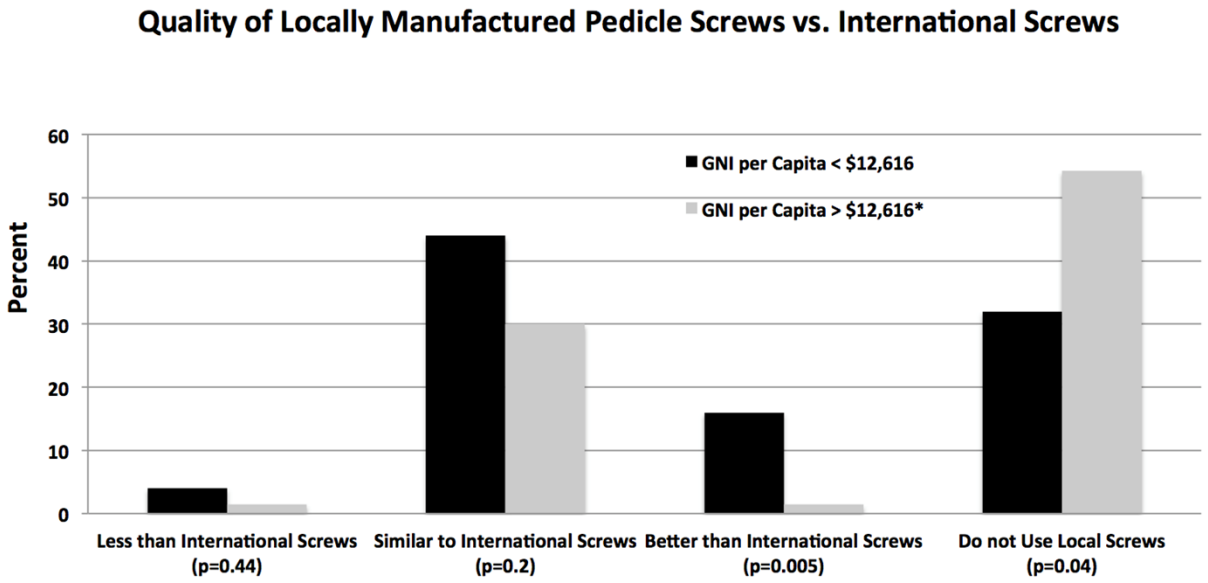
International Manufactured Monoaxial Screws



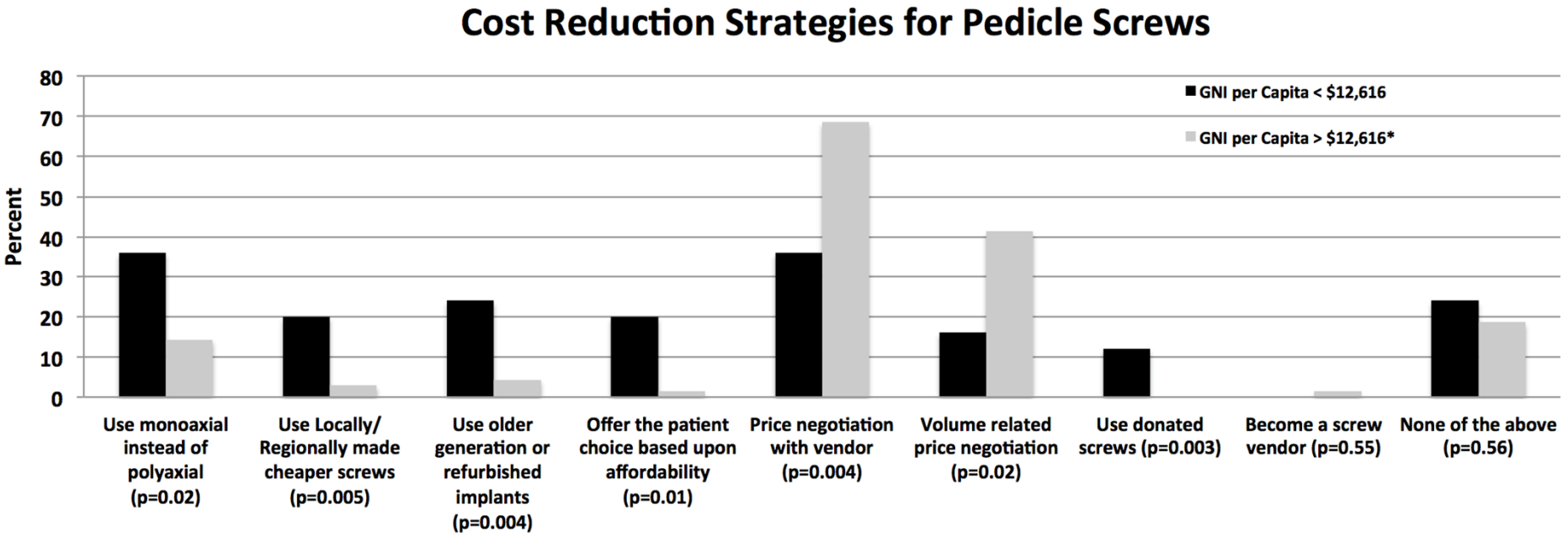
International Manufactured Polyaxial/Unixial Screws



Results



Results



- To reduce costs, a greater proportion of the LIC cohort utilized locally manufactured, older, refurbished, or donated implants ($p<0.05$)
- HIC cohort favored volume based or price negotiations with the vendor ($p<0.05$)

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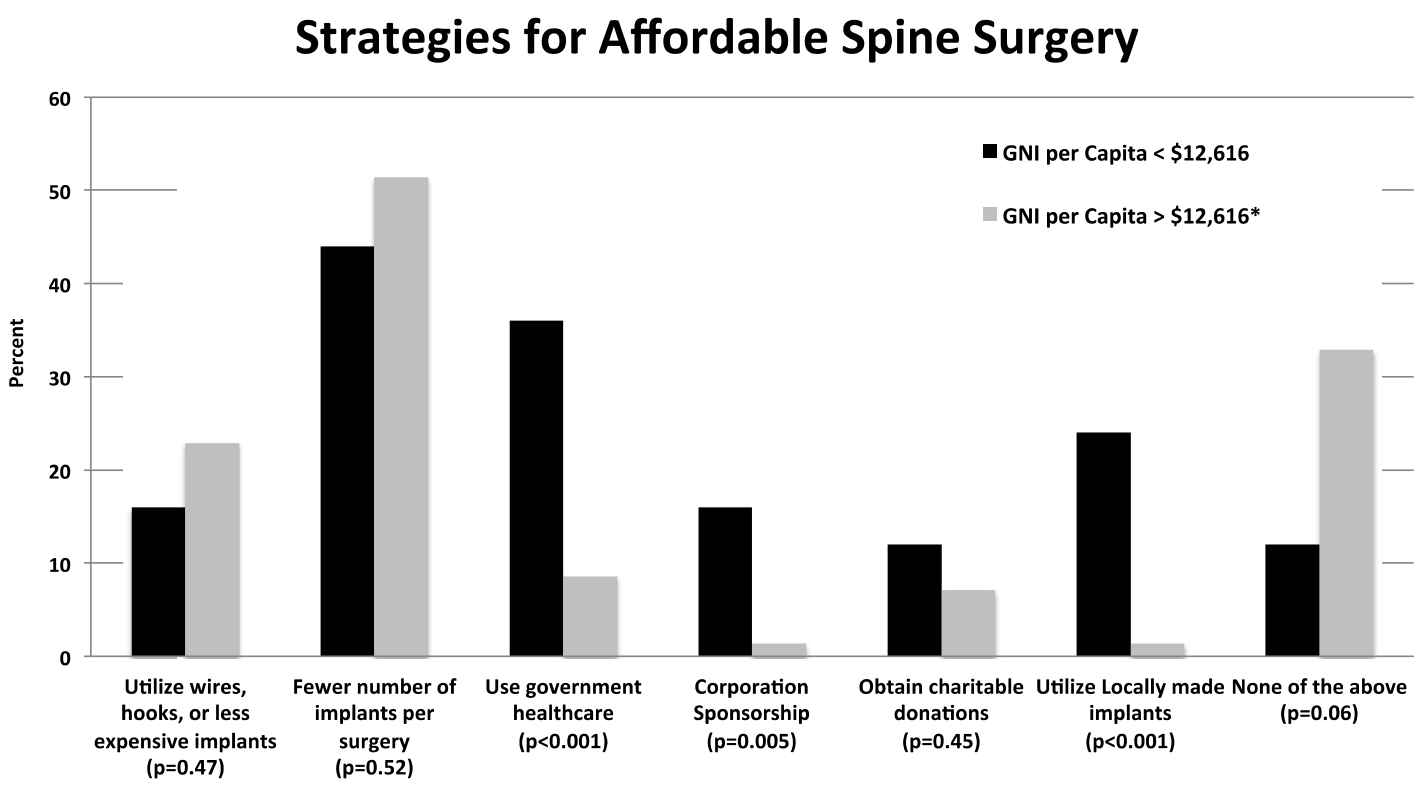
Results



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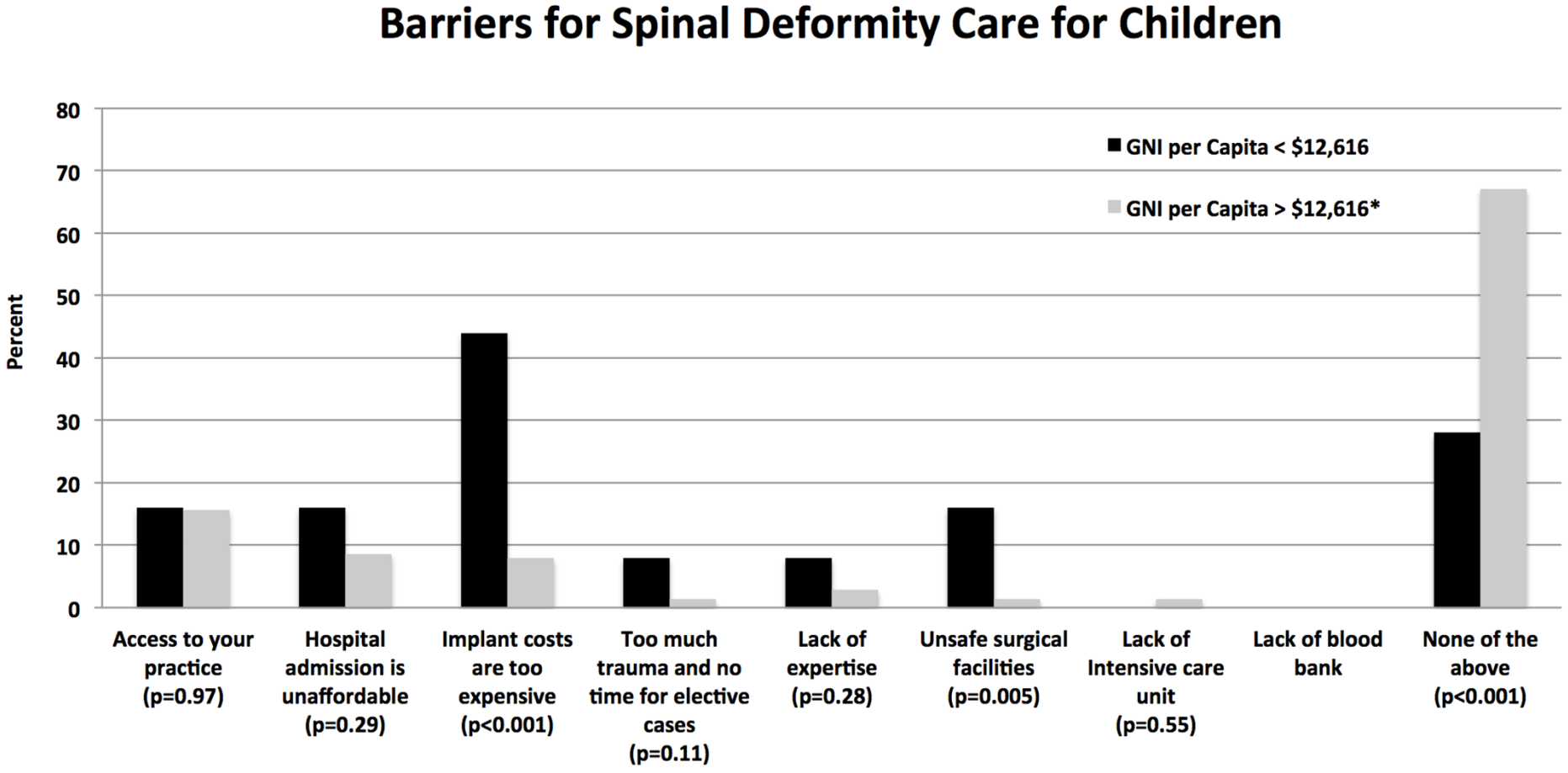
Results


Barriers for Spinal Deformity Care for Children
Percent
80
70
60
50
40
30
20
10
0
GNI per Capita < $12,616
GNI per Capita > $12,616*
Access to your practice (p=0.97)
Hospital admission is unaffordable (p=0.29)
Implant costs are too expensive (p<0.001)
Too much trauma and no time for elective cases (p=0.11)
Lack of expertise (p=0.28)
Unsafe surgical facilities (p=0.005)
Lack of Intensive care unit (p=0.55)
Lack of blood bank
None of the above (p<0.001)

Discussion

- Surgeons from LIC's perform a greater number of procedures annually
- Implant costs were greater in HIC's
- Patients in LICs are more likely to pre-pay or pre-purchase implants from the surgeon or vendor

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Discussion

- The majority of surgeons who utilize both local and international manufactured screws rated them as being similar in quality

- To reduce costs, a greater proportion of the LIC cohort utilized locally manufactured, older, refurbished, or donated implants
  - HIC cohort favored volume based or price negotiations with the vendor

- Implant costs and unsafe surgical facilities, rather than surgeon experience or skill, were more important barriers to access to PSDS in low-income countries