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COPYRIGHT@IJMPR STUDY OF PORT SITE INFECTIONS AND COMPLICATIONS POST VARIOUS LAPAROSCOPIC SURGERIES

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ABSTRACT:

Background: The objective of this study was to determine the incidence of port site infections and associated risk factors among patients undergoing laparoscopic surgeries.

Methods: A retrospective chart review was conducted on 285 patients who underwent laparoscopic surgeries in a tertiary care hospital from January 2022 to December 2022. Data on patient demographics, surgical characteristics, and incidence of port site infections and associated complications were collected. Statistical analysis was performed to determine the risk factors for port site infections and associated complications.

Results: The majority of the patients were between 31-50 years old (44.2%), and cholecystectomy was the most common type of surgery (35.0%). Out of 285 patients, 20 (7%) developed port site infections, with hernia repair having the highest incidence (9%). Superficial incisional SSIs were the most common type of infection (3.5%). The odds ratios for age, gender, BMI, and underlying medical conditions were not statistically significant. However, the odds ratio for the duration of surgery was 1.19, indicating that longer surgery duration may increase the risk of port site infections and associated complications.

Conclusion: The findings of this study suggest that the risk of developing port site infections varies depending on the type of laparoscopic surgery, with longer surgery duration possibly increasing the risk. While there were no statistically significant associations found between age, gender, BMI, and underlying medical conditions with the risk of port site infections and associated complications, patients with comorbidities may be at a higher risk. Further research is needed to identify additional risk factors and develop strategies to reduce the incidence of port site infections.

KEY WORDS:

laparoscopic surgery, port site infections, risk factors, odds ratio, duration of surgery.

INTRODUCTION:

Laparoscopic surgery, also known as minimally invasive surgery, has gained immense popularity over the last few decades due to its numerous advantages over traditional open surgery, including smaller incisions, reduced postoperative pain, shorter hospital stays, and faster recovery times [1]. Despite these benefits, port site infections (PSIs) remain a common complication of laparoscopic surgery [2]. PSIs can be defined as surgical site infections that occur at the incision site(s) where trocars are placed for the insertion of laparoscopic instruments during the surgery [3].

PSIs can lead to significant morbidity, prolonged hospital stays, and increased healthcare costs. The incidence of PSIs varies widely depending on the type of surgery performed, the patient population, and the definition of infection used [4]. The reported incidence of PSIs after laparoscopic surgery ranges from 0.2% to 16% [5]. The most common microorganisms isolated from PSIs are Staphylococcus aureus, coagulase-negative staphylococci, and Escherichia coli [6].
There are several risk factors that increase the likelihood of developing a PSI after laparoscopic surgery. These include obesity, smoking, immunosuppression, longer operating times, and the presence of preexisting infections [7]. In addition, the risk of PSIs may be increased in certain types of laparoscopic surgery, such as those involving the colon or rectum, due to the high bacterial load in the bowel [8].

The management of PSIs can be challenging and often requires a multidisciplinary approach. Treatment typically involves antibiotics, wound care, and, in some cases, surgical intervention [9]. The use of prophylactic antibiotics before surgery has been shown to reduce the risk of PSIs [10]. However, the optimal duration and type of antibiotic therapy remain unclear [11]. In addition, the increasing prevalence of antibiotic-resistant bacteria presents a significant challenge to the effective management of PSIs [12].

Given the significant morbidity and healthcare costs associated with PSIs, there is a need for further research to better understand the risk factors, prevention, and management of PSIs after laparoscopic surgery. This study aims to evaluate the incidence and severity of PSIs and associated complications, such as wound dehiscence and incisional hernias, following laparoscopic surgeries, including cholecystectomy, appendectomy, and hernia repair. The study will also investigate potential risk factors for PSIs, including age, gender, BMI, duration of surgery, and underlying medical conditions.

The results of this study will provide valuable information on the incidence of PSIs in different types of laparoscopic surgeries and identify potential risk factors for PSIs. This information will help guide the development of preventive measures and treatment strategies for PSIs, ultimately improving patient outcomes and reducing healthcare costs.

AIMS AND OBJECTIVES

To determine the incidence of port site infections following various types of laparoscopic surgeries, including cholecystectomy, appendectomy, and hernia repair.

1. To evaluate the severity of port site infections and associated complications, such as wound dehiscence and incisional hernias, following laparoscopic surgeries.
2. To identify potential risk factors for port site infections following laparoscopic surgeries, including age, gender, BMI, duration of surgery, and underlying medical conditions.

MATERIALS and Methods:

Study Design:

This prospective study aims to evaluate the incidence, severity, and risk factors of port site infections and complications following various types of laparoscopic surgeries, including cholecystectomy, appendectomy, and hernia repair. The study will be conducted at a tertiary care hospital from January 2022 to December 2022.

Sample Size Calculation:
The sample size calculation was performed based on the expected incidence of port site infections following laparoscopic surgeries. According to a previous study by Gad KH et al., the incidence of port site infections following laparoscopic surgeries was 9.25% [13].

The sample size was calculated using the formula:
n = [Z^2 * p * (1-p)] / E^2
where:
n = required sample size
Z = Z-value (standardized normal distribution) at the desired confidence level, which is 1.96 for 95% confidence level
p = estimated prevalence, which is 0.0925 (9.25%)
E = desired margin of error, which is 0.05 (5%)
Substituting the values into the formula:
n = [(1.96)^2 * 0.0925 * (1-0.0925)] / (0.05)^2
n = 284.96
Therefore, a minimum sample size of 285 patients was required for this study.

Inclusion Criteria:
- Patients aged 18 years and above
- Undergoing laparoscopic surgery for any indication
- Willing to participate in the study and provide informed consent

Exclusion Criteria:
- Patients with a known history of immunodeficiency disorders or immunosuppressive therapy
- Patients with a known allergy to any of the medications used in the study
- Patients with pre-existing infections at the surgical site
- Pregnant or lactating women
- Patients with a history of previous abdominal surgery that may affect the laparoscopic procedure or postoperative recovery
- Patients who require conversion to open surgery during the procedure
- Patients who are unable to provide informed consent or comply with study requirements

Data Collection:

Patient demographic data, including age, gender, BMI, and underlying medical conditions, was recorded. Surgical data, including the type and duration of surgery, were also be recorded. All patients were followed up for a minimum of 30 days postoperatively to assess the incidence and severity of port site infections and associated complications, including wound dehiscence and incisional hernias.

Statistical Analysis:

Descriptive statistics were used to summarize the patient demographics and surgical data. The incidence of port site infections and associated complications were calculated, and the risk factors for these complications were analyzed using logistic regression analysis. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations:

The study protocol has been approved by the institutional review board, and all patients will provide informed consent before enrollment.

RESULTS

A total of 285 patients who underwent laparoscopic surgeries for various indications were included in the study. The demographic and surgical characteristics of the study population are summarized in

PLAKKATEN CLASSIFICEREN MET DE COMPUTER?

Annemieke Romein
Digitale geesteswetenschappen

Researcher-in-residence Annemieke Romein is op zoek naar vroegmoderne regelgeving in plakkaatboeken (±1500-1800): regels tegen bijvoorbeeld bedelaars, over veiligheid, en ter stimulering van de economie. Met KB-collega's onderzoekt zij of, en zo ja, hoe een computerprogramma dit werk kan overnemen. Kan een computer teksten die regelgeving bevatten herkennen, en onderscheid maken tussen regelgeving rond religie, dijkwezen etc. ?

Als postdoctoraal onderzoeker in Gent onderzoek ik zowel handgeschreven als gedrukte regelgeving in de Nederlanden. Mijn onderzoek richt zich op dit moment voornamelijk op de gewesten Vlaanderen en Holland in de periode 1576 (Pacificatie van Gent) tot 1702 (Spaanse Successieoorlog), waarbij ik onderzoek waarover regels werden gepubliceerd. Ik ben in het bijzonder geïnteresseerd in veiligheid en publieke orde mede omdat dit thema's zijn die op dit moment actueel zijn. Wanneer je echter een selectie van regelgeving wilt gebruiken, dien je wel het geheel door te lopen en dit te beoordelen. Daardoor kwam bij mij de vraag op, of de computer te trainen is om deze taak over te nemen. Ik ben dan ook erg blij dat ik voor een onderzoeksproject van zes maanden bij de Koninklijke Bibliotheek in Den Haag mag werken. Mijn interesse in vroegmoderne wetteksten werd al in 2005 gewekt toen een professor mij een Duits artikel liet lezen dat veronderstelde dat in landen zonder vorst, geen plakkaten gepubliceerd zouden kunnen zijn. Echter, zo constateerde deze professor, in de bibliotheek lagen weldegelijk veel plakkaatboeken.

Plakkaten, wat zijn dat?

In de tijd dat het huidige Nederland nog deel uitmaakte van de 17 Verenigde Nederlanden – en na 1581 haar eigen weg koos als de Republiek der Zeven Verenigde Nederlanden - werden regels afgekondigd door een stadsomroeper.

AFBEELDING 1 Omroeper, Cornelis Ploos van Amstel, naar Cornelis Dusart, 1776; prenttekening; ets en roulette, h 201mm × b 155mm. Bron: http://hdl.handle.net/10934/RM0001.COLLECT.165473

Die omroeper liep door de stad of ging te paard verschillende locaties langs en las de regels voor. Vervolgens spijkerde hij ze op goed zichtbare plekken vast zodat ze konden worden nagelezen. Naar schatting 70% van de stedelijke bevolking kon enigszins lezen; de stem van de omroeper had dus zeker nut voor wie minder goed zelf kon lezen. Aangezien je regels niet even op het internet kon terugzoeken, was het belangrijk dat de regelgeving duidelijk was, logisch en vooral: dat mensen het konden onthouden. Zodoende zit er vaak een herhaling in de tekst. Daarnaast stond in de 16de en 17de eeuw de orale cultuur centraal.

AFBEELDING 2A Gezicht op de Nieuwe Kerk te Amsterdam, anoniem, 1693 – 1694. Etsen, h 273mm × b 353mm. Bron: http://hdl.handle.net/10934/RM0001.COLLECT.232576

AFBEELDING 2B Detail: plakkaten naast de kerkdeur.

Plakkaten (ook wel bekent onder de term ordonnanties) werden om die reden op 'bekende plekken' aangeplakt. Op deze manier was de regelgeving officieel vastgesteld, net als dat het tegenwoordig nodig is om vastgestelde wetten in de Staatscourant te publiceren. De Gewestelijke Staten vonden het daarnaast belangrijk om een selectie van de door hun goedgekeurde regels te laten herdrukken in plakkaatboeken. Deze vormden een bron voor juristen zodat zij eenvoudig regels konden nazoeken. De boeken geven dus geen volledig overzicht van *alle* uitgevaardigde regels, maar vormen een selectie van de regels die het gewestelijk bestuur de moeite waard vond.

Gefascineerd door regelgeving in een federatie

De Republiek, maar ook de Habsburgse Nederlanden, waren een federatie van autonome staten. In de Republiek waren de Staten-Generaal soeverein; en in de gewesten hadden de Gewestelijke Staten de hoogste macht. De stadhouder was feitelijk een ambtenaar in dienst van deze instellingen. De Habsburgse Nederlanden verschilden van de Republiek in het opzicht dat een soevereine vorst (de koning van Spanje) de hoogste macht had, maar de Gewesten hadden ook daar nog een zekere mate van vrijheid. Zij moesten controleren of regelgeving niet botste met lokale gewoonten en gebruiken.

Tóch wordt, als je in de geschiedenisboeken kijkt, de vroegmoderne geschiedenis veelal afgeschilderd als een spel tussen vorstenhuizen. Het gevolg is dat republieken, zoals de Republiek der Zeven Verenigde Nederlanden en Zwitserland zelden genoemd als de politiek-institutionele en juridische kant wordt beschreven. Dit vind ik een interessant gegeven: we wéten dus eigenlijk gewoon heel weinig over hoe de verschillende gewesten daadwerkelijk bestuurd werden en we hebben geen complete overzichten over de wetgeving.

In België zijn ze hier veel verder mee, omdat zij een 'Koninklijke Commissie voor de Uitgave van Oude Wetten en Verordeningen' hebben, die als doel heeft alle oude regels op te zoeken en te publiceren. Zulke bronnenpublicaties in de vorm van boeken, vormen daar een rijke bron van informatie voor onderzoekers. Deze Belgische commissie is al rond 1846 begonnen en geeft dit soort publicaties nog altijd in boekvorm uit.

Hoe groot was het verschil in regelgeving tussen Holland en Vlaanderen?

In Nederland zijn we dus nog niet zo ver dat er überhaupt een bronnenoverzicht (per gewest) bestaat en dus kunnen we moeilijk uitspraken doen hoe over hoe de regelgeving in de Lage Landen onderling en met andere gebieden samenhing. Dat fascineert mij, omdat mijn huidige onderzoek in Gent aanleiding geeft om te denken dat het verschil tussen Holland en Vlaanderen – die beide op handel gericht waren, niet heel erg groot was. Hieruit blijkt vooralsnog dat het door een vorst (indirect) bestuurde Vlaanderen en het gewest Holland als onderdeel van de Republiek niet zo enorm verschilden als soms wordt voorgespiegeld.

Computertechnieken

Om dit verschil te kunnen onderzoeken, is een eerste, belangrijke stap in het Researcher-in-Residence-project het verbeteren van de leesbaarheid van de vroegmoderne werken in druk. Als mens kunnen wij de teksten vrij goed lezen, al is werk in een gotische drukletter uitdagender dan in romein. De computer vindt het vooralsnog allemaal best lastig. In het Google Books-project is gewerkt met OCR-herkenning en blijkt dat de tekst die je probeert te kopiëren in een tekstverwerkingsprogramma onbruikbaar is vanwege de grote hoeveelheid verkeerd gelezen tekens.

Dit heeft dan ook een direct gevolg voor het kunnen zoeken op trefwoorden in de tekst. Daarom maken we in dit project gebruik van Handwritten Text Recognition. Deze techniek is in het bijzonder in het Europees gefinancierde READ-project ontwikkeld, en heeft het programma Transkribus opgeleverd. Dit programma wordt getraind door middel van transcripties (het handmatig overtypen van een handschrift of, in ons geval, drukwerk). Daardoor wéét de computer hoe bepaalde tekens weergegeven worden in een bepaald handschrift. Bovendien kan het programma in de tekens in een context plaatsen want het kijkt naar complete regels en niet naar individuele tekens. Een N-Gram op de achtergrond onthoudt veel voorkomende lettervolgordes (bijvoorbeeld dat een ‘q’ altijd wordt gevolgd door een ‘u’).

Doordat wij de computer feitelijk voor de gek houden door te stellen dat ons drukwerk een handschrift is (maar dan wel een héél regelmatig handschrift) zal het in staat zijn om de tekst veel beter te herkennen dan wanneer er alleen maar gekeken wordt naar individuele tekens (zoals bij Optical Character Recognition).

Ik had van deze techniek gehoord, maar ze zelf nog nooit toegepast op drukwerk en ik werd nieuwsgierig. Kunnen we op die manier dan misschien alle plakkaatboeken (binnen het project zijn er zo’n 100 verzameld) veel beter doorzoekbaar gaan maken? Waar ik in mijn huidige project in Gent zelf labels zit te plakken op alle individuele teksten, vroeg ik mij af of de computer hier nu ook in getraind kan worden. Kan de computer getraind worden om te begrijpen waarom ik bepaalde keuzes heb gemaakt, en kan hij deze kennis toepassen in andere plakkaatboeken? Tijdens mijn project bij de KB probeer ik hier een antwoord op te vinden.

Afbeelding 3a Het Paalhuis en de Nieuwe Brug te Amsterdam in de winter, Jan Abrahamsz. Beerstraten, 1640 – 1666. Olieverf op doek, h 84cm × b 100cm. Bron: http://hdl.handle.net/10934/RM0001.COLLECT.5966

AFBEELDING 3b Detail met plakkaten aan de muur van het Paalhuis, Amsterdam.

EVERGRANDE: A DISASTER IN MAKING FOR CHINESE ECONOMY!—AN ESSAY

Dr. Brij Behari Dave
Retired Member Postal Services Board, GoI.

A B S T R A C T:

China's second largest Agglomerate in the field of real estate Evergrande, over the years increased its debt to 300 bn. Dollar in the garb of extending its operations, venturing into the field of electric vehicle manufacturing thereby transgressing all the three redlines imposed by Xi Ping government on debt to be held by companies. Although majority of the borrowing is from one to one within the country, but international bonds are also held by some foreign entities. With this giant not in a position to meet the payment liabilities due since September, 2021, having been caught in a severe cash crunch, has barely managed to repay some dues within the country by disposing the assets at discounted rates and deferring payments to suppliers and by issuing paper bonds. The company has also failed to meet the international obligations in case of international bonds and may seek more time from them, the contagion will spread to some Central banks of countries across the globe but it is not expected to be so serious as in the Lehman Brothers case of 2008. However, due to non-payment of the dues within the country to the creditors and suppliers as well as to the customers who had deposited amount of advance with the company for booking the flats and bungalows in various provinces will cause considerable financial distress within the country, adversely affecting the demand as a whole in the economy. As the Central Government is not willing to bail out the company some of the provincial governments will try to protect the rights of some suppliers and customers to a small extent by disposing off the assets at highly discounted rates; but the proposed modalities of the process are still not clear. The aim is to reduce the impending damage to the targeted rate of growth of the economy, which is very considerably has hither to been achieved by resorting to such actions by big companies which constitute 'moral hazard', as now all creditors and suppliers are expected to act rationally. In this direction, therefore, all the court cases relating to the crisis are transferred to the provinces. However, another problem is the half-finished apartments which constitute a major part of the company's inventory; even for the completed apartments, the demand has dwindled. In China, real estate investment is a major part of average Chinese family expenditure from life-time earnings. With so much of money clogged, the average purchasing power of the citizens will come down drastically, affecting the rate of GDP growth. As the moral hazard growth rate of China has also dried up considerably, the Chinese economy will suffer a steep downward trend, unless they develop other forms of subsidiary growth rate involving moral hazard of some other kind. Looking to these conditions, the latest World Economic Outlook has revised the growth rate projection for China to 8.1% for 2021 and 4.8% for 2022, whereas for India it is 9.0% and 9.0% respectively .

KEYWORDS:

Evergrande, Debt Crisis, Chinese Economy in 2021 and 2022, Moral Hazard Growth Rate of China

INTRODUCTION

In just a few years Evergrande Real Estate Group, a regional construction Company, catapulted into one of China's biggest Real Estate Group having more than 1300 projects spread over 380 cities in China. The world is still waiting to find out about what happens to the troubled conglomerate and its mountain of debt. The property developer's debt crisis is a major test for Beijing and some experts fear that it could turn into Chinese Lehman Brothers moment, sending shockwaves across the world economies. It is important to mention here that the real estate sector accounts for 30% of Chinese GDP. On a few occasions the company has failed to meet the crucial debt repayment deadline. What will happen next to the company—will Beijing bail it out or it will be restructured or it will be allowed to fail.

The Expansion and How did it run into Troubled Waters:

In recent years, Evergrande's debts ballooned as it borrowed heavily to finance its various pursuits. Now it has accumulated over $300 billion worth of debt and liabilities and developed into an infamy to have become China's most indebted developer. The giant has also expanded into many other ventures and many experts like Goldman Sachs believe that the company's structure has made it "difficult to ascertain a more precise picture of its recovery". The complexity of Evergrande group and the lack of sufficient information on its assets and liabilities add to the uncertainty. Bekink observes that "The story of Evergrande is the story of the deep structural challenges to China's economy related to debt".

The Financials:

Some of the latest Financial Ratios of the company are:

Valuation

Price/Book	Price/Cash Flow	Price/Sales	Price/Earnings
0.17	0.35	0.07	2.04

Financial Health

Quick Ratio (Current Assets-Inventories)/(Current liabilities)	Current Ratio (Current Assets)/(Current Liabilities)	Interest Coverage	Debt/Equity
0.17	1.24	5.66	3.00

From the above ratios the main observations at macro-level can be summarized as: -

1. Highly leveraged: total debt over 3x shareholders' equity.
2. Reliant on short-term funding.
3. Spiralling interest payments.
4. Negative cash profits.
5. Liabilities probably exceed value of assets: strong possibility insolvent.

The extraordinary growth has been mainly debt-financed. Moreover, it is highly leveraged with large borrowings and other liabilities balanced on a small silver of equity (Debt/Equity). This ratio, as shown above is now over three times shareholders' equity. It is reliant on its lenders' continuing support by offering short-term borrowings.

The Ballooning Debt

It has been observed that since 2010, more than half of the company's growth started to be financed by debt, rising to two-thirds in the year 2013 and in the year 2014, it tripled. Share of Equity in total funding had fallen to just 13%, despite an increased contribution from minority investors and significant revaluation gains on its investment properties. Similarly, the proportion of financing provided by customer deposits on pre-sold properties had more than halved during this period. The below Figure-1 indicates the breakup of the total borrowings including perpetual capital instruments which had more than tripled by 2014.

Figure-1

Since 2013, the company has borrowed large amounts of perpetual capital instruments. These are regarded as equity for accounting purposes, as they have no fixed repayment date and distributions can be deferred. However, for shareholders it is a debt, as they will be paid ahead of them in case of bankruptcy. Although perpetuals are issued by onshore subsidiaries, they will rank ahead of the company's offshore bonds. However, one peculiar feature of the perpetuals is that after second year, the company is imposed with punitive interest rate.

Thus, Evergrande is reliant on the continuing support of creditors and has a severe refinancing risk. Hence it may not be wise to assume by shareholders and offshore bond holders that Evergrande is "too big to fail".

Weakening Cashflow

In order to see if the travails of Evergrande's could have been anticipated, we have to look at the annual reports of the last five years. The crucial revenue figures are given below: -

2016	2017	2018	2019	2020
Revenue in Millions RMB	211,444	311022	466,196	477,561	507,248
Revenue Growth	59%	47%	49%	2%	6%

Thus, Evergrande's revenue growth fell consistently from 59% to 2% in 2019 before recovering to 6% in 2020, the largest drop being between 2018 and 2019. This is troubling since rapidly falling growth is more than just a warning sign as it may incentivise bad accounting practices and also risky business practices in order to make the figures look pretty.

Although the revenue of the company rose and profits stayed flat, the cash-flow statement tells a different story. The main relevant data are given below:

2016	2017	2018	2019	2020

Cash Flow from Operations (CFO)	-58,610	-150,973	54,749	-67,357	110,063
Free Cash Flow to the Firm (FCFF)	-44,063	-111,696	99,487	-15,729	169,791
CFO/Net Income	-3.33	-4.07	0.82	-2.1	3.5

Negative CFO shows that the company is unable to make money from its operations. An erratic CFO means that the firm may be at the mercy of lenders to fund its operations.

Net income is a mix of accruals and cash, while CFO is pure cash. Therefore, CFO to Net Income ratio tells how much of the booked profits for a year were received in cash. In healthy firms, this ratio will be flat to rising. A falling or volatile ratio of CFO/Net Income indicates an unusually high number of accruals and thus both are alarming. An unusually high number of accruals in the income statement is caused by the volatility of the ratio and falling CFO.s

Boosting Cash by Delaying Payments

Delaying payment to the suppliers' bolsters CFO in response to poor cash inflows. The ratio indicating this tendency is the number of days payable outstanding (DPO), or the number of days the cost of sales is lying unpaid. If everything else remains constant, an increasing DPO becomes troublesome. In case of Evergrande, the DPO jumped from 379 days in 2016 to 553 days in 2020. The company's cashflow statement shows that CFO soared from a deficit of 67 BN RMB in 2019 to 110 bn RMB in 2020. This was due to receipt of trade payables, which rose by RMB 77 bn despite decline in property construction activity. This is not sustainable. From this increase in the cashflow, the company repurchased RMB 4 bn of shares and paid dividend worth 59 bn RMB in 2020. This draws the inference that Evergrande likely delayed payments to the suppliers boosting CFO to pay dividends and repurchase shares. At the same time in 2020, it took new loans of RMB 303 bn.

Increasing Write-Downs

Another manipulation in accounting that was resorted to by Evergrande was showing properties under development (PUD) and properties held for sale (PHS) as assets on its balance sheet. In aggregate, these accounted for nearly 60% of the firm's assets during 2019 and 2020. Although the amounts involved are small, they tend to indicate a deteriorating market for the firm's properties. This trend started in 2017 and ultimately showed slowing growth of sales.

DEVELOPING DATA FOR POLICY: MAPPING THE POLITICAL ECONOMY OF MEASURING GOVERNANCE

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Summary Paper: Dataset description and explorative analysis
The growing demand for comparable data for policy in global governance stimulated the supply of performance-based assessments. Following this development, also the study of governance indicators and their use has gained traction. In this context, both the quality and power of governance measures have been widely investigated, while political economy questions featured less prominently. The lack of attention to the political economy of governance measures has been accompanied by a metrological attitude to indicators that treat metrics and numbers as mere representations of the reality, as 'things' pointing to or signalising something else (Bhuta, Malito, and Umbach 2018, 6). Such understanding of indicators as mere representations of an external reality has obfuscated inquiry into the knowledge production of the contemporary indicators' culture, even though notable exceptions have emerged. The recently developed interest in the power of indicators presents appealing arguments defining how metrics influence national and international politics. Yet, a systematic analysis of who sets the agenda of measuring governance and how measuring affects agenda-setting powers is still missing. Therefore, although we have a consolidated knowledge about the producers of governance measures, we still do not have a systematic overview of the distinctive nature, purposes and spatial character of the actors, networks and institutions involved in their funding and production.
Our dataset on 'The Political Economy of Governance Measurement: a database on providers, funders, and quality characteristics of governance measures' (Hulme, Malito, Umbach and Savoia 2020) contributes to the debate on data for policy in this perspective. It presents new data that shed light on structures and hierarchies of measuring governance quality and identify the actors that fund, produce and manage governance measures. For our data collection, we defined the political economy of measuring governance as the study of political and economic variables that shape the production and funding of governance measures. By tracing the political economy of governance indicators, the dataset supports a systematic analysis of who rates governance, where, how and what for.
In our explorative research based on the dataset, we analyse how political economy factors influence framing within the current global indicator culture, consequently setting the policy agenda in global governance. We find that combining three basic dimensions of measuring governance – quality of

metrics, political economy, and geography of production – can yield a scalar (geographical and governance level) understanding of the distribution and contribution of governance measures. Such a perspective enhances the understanding of whether patterns of the political economy and geography of measuring establish power relations in governance at transnational level. Our dataset therefore contributes to analysing "the much overlooked performative role of numbers in governance processes" (Hansen and Porter 2012, 409).

Measuring the governance quality and capacity of states has become a crucial tool for global development, even if the quality of contemporary measures of governance still raises concerns about their overarching acceptability and legitimacy. Although measuring progress towards the SDG's development agenda has encompassed different strategies to enhance the inclusiveness of measurement efforts, we still only have an opaque understanding of how elements of political economy and geography affect measuring itself. Most scholars and policy-makers agree that the design of rules and regulations, the effectiveness of policies, and the competence of public bodies play a central role in the functioning of states and economies (Baland, Moene and Robinson 2010). However, existing measures of governance do not reflect a globally and politically shared notion of governance quality. In terms of economic and political preferences, they rather reflect the views of a specific subset of the 'international community' (i.e., international organizations and donor countries). Hence, their legitimacy as approximations to 'good' governance is conceptually and politically challenged. In the process of data production for policy, this issue raises particular criticism in view of the political acceptability and statistical desirability of existing governance measures (Hulme, Savoia, and Sen 2014). This contestation can have unfavourable effects not only on the conceptual debate surrounding state capacity and governance metrics, but also on the overall engagement of actors in their production.

Despite the growing attention to questions of legitimacy and validity of measuring governance, we have a limited knowledge about the structures, hierarchies and power relationships involved in the world of measuring governance. Therefore, the impact of political economy factors in the supply (and quality) of governance metrics require more systematic analytical attention as do the implications of subscribing to Eurocentric avatars (Wallerstein 1997) when measuring and monitoring governance. Scholars have critically examined the relationships of power embedded in the construction and use of contemporary measures of governance, corruption, development (Cooley and Snyder 2015; Davis et al. 2012; Kelley and Simmons 2014; Malito, Umbach, and Bhuta 2018; Merry, Davis, and Kinsburg 2015). Some have looked at the role of global performance indicators as a means of soft (Merry, Davis, and Kinsburg 2015) and productive power (Davis et al. 2012a). Others have paid greater attention to the power of rankings in world politics (Cooley and Snyder 2015), as well as their potential to stimulate political pressure on state behaviour (Kelley and Simmons 2014). Although this literature has contributed to framing the contemporary reflexive indicator culture (Bhuta, Malito, and Umbach 2018), where quantification, indicators, and rankings are trusted and approached as a way of doing politics, a systematic analysis of who sets the agenda of measuring governance and how measuring affects agenda-setting powers is still missing. This opaque understanding of how aspects of

political economy and geography affect measuring governance nurtures a rich research agenda combining the analysis of development policies with data analysis and data science.

To address this gap, we approach measures of governance as intersubjective concepts and paradigms that are complex, instable, not clearly delimited and for which we need a better understanding of the political ecosystem in which they are made and make sense. Consequently, our dataset maps the geographical and governance level distribution of state capacity and governance measures to sharpen the systematic view on the distinctive nature, purposes and spatial character of the actors, networks and institutions involved in their funding and production. Knowing who funds, who generates, who rates and where these actors are located sheds light on the notion of governance quality of current governance measures. It enables us to investigate the setting of international standards and the monitoring of governance goals to understand how measures become part of a standardised activity of producing high-quality internationally comparable data for policy.

The dataset combines data from 81 metrics of governance and state capacity and extends over the period from 1789 to 2020 (see Annex 2). The measures included capture a wide range of dimensions that mostly focus on the assessment of state governance: state capacity (legal and administrative capacity of states), democratic governance (political rights, civil liberties, representation), corruption and integrity, press freedom and accountability, rule of law, protection of property rights, functioning of political institutions. Many governance measures providers rely on both measures of institutional performance and state capacity to aggregate metrics of governance. The dataset thus includes information on governance performance measures, drawing on several data sources. The variables were collected from the methodological documentation and the websites of the original measures. They have been cross-checked with the World Governance Indicators, Quality of Government Dataset, Harvard Dataverse, UNDP Governance Assessment Portal.

Our dataset generates new data for policy and provides insights by categorising the content and governance dimension of such measures. It contains 42 variables (see Annex 3), obtained (in most cases) from coding qualitative information, on the characteristics of governance measures capturing the performance of one or more dimensions of governance. The dataset takes stock of measurement and assessment tools and presents the variables used by these tools. By considering the absence of cohesion on the fundamental definition of what constitutes governance, the dataset does not privilege one approach over the other. It aims to present a valid overview of existing measures of state performance and hence includes a variety of measures that are broadly considered governance measures, even if they capture different aspects and dimensions of governance and are used by different entities. The dataset presents stylised facts of comparative and cross-national governance measures produced by a range of different actors (see Annex 1). It considers measures that are issued or updated on a regular basis. With few exceptions (i.e., measures for academic research), it does not include occasional measures and rankings, which do not allow for trends analysis.

Most measures in the dataset result from the aggregation of a restricted number of indicators (0 to 99), while some are composed by a higher number of indicators (100 to 399), and few account for a number of indicators that is higher than 400 (see Graph 3). Considering the number of sub-indexes (see Graph 2) and thematic areas (see Graph 1) in which the measures are organised, most measures

is composed by a small number of sub-indices and thematic areas (0 to 9). The most common dimensions of governance analysed are corruption, economic processes, government, law, accountability, civil liberties, electoral processes, and regulatory authority. Based on this reduction of complexity, governance measures enhance comparative judgments and the dataset's evidence shows that most contemporary measures of governance are used to rank state performance.

Among the measures covered by the dataset, a slight preference emerges for the output perspective of governance (see Graph 5) and half of them use a mixed methodology combining both subjective/survey and objective/statistical data for the assessment (see Graph 6). More than half of the governance measures in the dataset are results of academic or expert assessments (see Graphs 9 - 11). In terms of reach, most measures have a global scope, while not having a global coverage (see Graph 8). These measures provide cross-countries data related to all the continents. Less measures have a regional coverage opting for a specific regional scope, and some have a proper global coverage, or at least attempt to approximate the global value of governance by covering a number of countries equal or bigger than the official number of nation states recognised by the United Nations. In many cases, the limitation in country coverage relates to data accessibility as well as diachronic and comparative consistency.

Overall, our explorative analysis of the dataset finds a Global North-Global South divide in the production and use of governance metrics (see Graphs 12 and 13). It shows that measures of governance reflect the political, institutional, legal, cultural, social, and geographical context from which they stem, and in which are applied. Their conceptual nature varies according to their purpose, usage, and developers. Our explorative analysis could also suggest that the nature of producers and funders, and their geographical location, may influence measuring and monitoring SDG 16 and pointed at how states' policies may be influenced using governance measures. Due to their multilevel usage, such variation is magnified as governance measures are required to perform in different systemic contexts for diverse actor groups even if the instruments themselves remain targeted on evaluating political structures and processes no matter if they are used for rankings, ratings, reforms, advocacy, or research. Such required fitness for multi-purpose applicability creates challenges not only for designing governance measures, but also for the reform of governance systems they evaluate. Assuming, however, that governance measures could be defined homogenously, would fall victim to the mistake of creating 'clinical' measures detached from real world context. Our future analysis will elaborate further on these explorative findings.

Annex 1: Stylised facts of comparative and cross-national governance measures
(Source: Authors' database)

MEASURES
Graph 1: Simplicity – Number of areas covered

Graph 2: Simplicity – Total number of sub-indexes

Graph 3: Simplicity – Total number of indicators

N.B.: The graph considers those indices (72) for which we can calculate the cumulative number of indicators they are composed of.

Graph 4: Coverage – Years available
Graph 5: Coverage – Analytical Focus
Graph 6: Coverage – Type of indicators
Graph 7: Coverage – Type of survey
Graph 8: Coverage – Governance level

PROVIDERS
Graph 9: Types of providers - Sector
Graph 10: Type of provider – Institutional characteristics
Graph 11: Types of providers – Research category
Graph 12: Providers – Geographical distribution
Graph 13: Providers' country - Income level
FUNDER
Graph 14: Type of funder - Sector
b

Graph 15: Geopolitical origins/space of funder
Annex 2: List of Measures and Data Sources

Code-- ID	Name of the Measure	Source
1	African Development Bank Country Policy and Institutional Assessments (ADB)	http://www.afdb.org/en/about-us/african-development-fund-adf/about-the-adf/
2	African Electoral Index	http://static.moibrahimfoundation.org/u/2015/09/30185740/IREEP-African-Electoral-Index-2000-2013-Methodology.pdf
3	Afrobarometer	http://www.afrobarometer.org/about/funding
4	AmericasBarometer	http://www.vanderbilt.edu/lapop/about-americasbarometer.php

5 Asian Barometer https://www.asianbarometer.org

6 Asian Countries Policy and Institutional Assessment (ASD) https://www.adb.org/documents/annual-report-2018-country-performance-assessment-exercise

7 Authoritarian Regime Data Set https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxhdXRob3JpdGFyaWFucmVnaW1lZGF0YXNldHxneDozYWE3OTdhMmM0OTY2Njkz

8 Autocratic Regime Data Set https://sites.psu.edu/dictators/

9 Bertelsmann Transformation Index (BTI) https://bti-project.org/en/

10 Business Environment and Enterprise Performance Survey (BPS) http://www.enterprisesurveys.org/about-us and http://data.worldbank.org/data-catalog/BEEPS; http://ebrd-beeps.com/about/

11 Centripetal Democratic Governance http://www.bu.edu/sthacker/research/articles-and-data

12 Centripetal Democratic Governance II http://www.bu.edu/sthacker/research/articles-and-data/; https://books.google.de/books?id=ud53tuCz5qAC&printsec=frontcover&dq=A+centripetal+theory+of+democratic+governance&hl=de&sa=X&ved=0ahUKEwiM5-6_mqTnAhVN_KQKHedEB14Q6AEIKzAA#v=onepage&q=A%20centripetal%20theory%20of%20democratic%20governance&f=false

13 Cingranelli Richards Human Rights Database (HUM) www.humanrightsdata.com

14 Classification of Political Regimes (DD revisited) http://faculty.georgetown.edu/jrv24/Alvarez_et_al_1996.pdf

15 Comparative Constitutions Project http://comparativeconstitutionsproject.org/

16 Comparative Political Data Set http://www.cpds-data.org/

17 Comparative Political Parties Dataset https://web.archive.org/web/20180712111213/http://www.nsd.uib.no/macrodataguide; http://www.nsd.uib.no/macrodataguide/set.html?id=5&sub=1

18 Comparative Study of Electoral Systems http://www.cses.org

19 Comparative Welfare State Entitlements Data Set http://cwed2.org/

20 Contestation and Inclusiveness http://www3.nd.edu/~mcoppedg/crd/datacrd.htm

21 Corruption Perception Index www.transparency.org

22 Countries at Crossroad (Freedom House) https://freedomhouse.org/sites/default/files/Countries%20at%20the%20Crossroads%202012%20-%20Booklet.pdf; https://freedomhouse.org/report-types/countries-crossroads

23 Country Policy and Institutional Assessment (WB) http://data.worldbank.org/data-catalog/CPIA; http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTDATASTA/0,,contentMDK:21115900~menuPK:2935553~pagePK:64168445~piPK:64168309~theSitePK:2875751,00.html

24 Database of Political Institutions (DPI) https://publications.iadb.org/en/database-political-institutions-2017-dpi2017

25 Democracy Index EIU https://www.eiu.com/public/topical_report.aspx?campaignid=democracyindex2019

26 Doing Business ('Ease of doing business') http://www.doingbusiness.org/

27 Economic Effects of Constitutions http://www.igier.unibocconi.it/folder.php?vedi=823&tbn=albero http://mitpress.mit.edu/sites/default/files/titles/content/9780262162197_pre_0001.pdf

28 Economic Freedom of the World https://www.fraserinstitute.org/economic-freedom/datasets_efw.html

29 Electoral Systems and the Personal Vote https://dataverse.harvard.edu/dataset.xhtml?persistentId=hdl:1902.1/17901; Johnson, J. W., and J. S. Wallack. 2011. Electoral systems and the personal vote.

30 Enterprise Surveys https://www.enterprisesurveys.org/en/about-us

31 Eurobarometer (Standard) http://www.gesis.org/eurobarometer-data-service/home/; https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/Survey/index#p=1&instruments=STA

NDARD

32 European Bank for Reconstruction and Development Transition Report (EBR) https://www.ebrd.com/transition-report-2019-20

33 European Social Survey http://www.europeansocialsurvey.org/

34 Event History Coding of Democratic Breakdowns http://users.clas.ufl.edu/bernhard/content/data/data.htm

35 Freedom in the Worldhttps://freedomhouse.org/report-types/freedom-world; https://freedomhouse.org/report/methodology-freedom-world-2019

36 Gallup World Poll http://www.gallup.com/poll/105226/world-poll-methodology.aspx

37 Global Competitiveness Report / Index (GCS/WEF) https://reports.weforum.org/global-competitiveness-report-2018/

38 Global Corruption Barometer https://www.transparency.org/research/gcb

39 Global Corruption Barometer - Regional editions https://www.transparency.org/research/gcb

40 Global Indicators of Regulatory Governance https://rulemaking.worldbank.org/

41 Global Insight Business Risk and Conditions (WMO) http://info.worldbank.org/governance/wgi/WMO.xlsx; https://www.ihs.com/industry/economics-country-risk.html; http://www.globalinsight.com

42 Global Integrity Report www.globalintegrity.org

43 Heritage Foundation Index of Economic Freedom (HER) http://www.heritage.org/index/

44 HRV Index http://0001c70.wcomhost.com/wp2/

45 Ibrahim Index of African Governance http://www.moibrahimfoundation.org/iiag/; http://static.moibrahimfoundation.org/u/2015/09/03150715/2015-iiag-methodology.pdf

46 ICTWSS: Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts https://www.oecd.org/employment/ictwss-database.htm; Different sources

47 IDA Resource Allocation Index http://ida.worldbank.org/financing/resource-management/ida-resource-allocation-index

48 IFAD Rural Sector Performance Assessments www.ifad.org

49 iJET Country Security Risk Ratings (IJET) http://pages.ijet.com/Global-Forecast-Request-Maps-Adwords.html

50 Institutional Profiles Database (IPD) http://www.cepii.fr/institutions/EN/ipd.asp

51 Institutional Quality Dataset https://sites.google.com/site/aljazkuncic/research; http://www.hnb.hr/dub-konf/19-konferencija/yes/kuncic.pdf; https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxhbGphemt1bmNpY3xneDo0MmE4OGM0NzQ0Njk1YzIw

52 Institutions and Elections Project (IAEP) https://www.binghamton.edu/political-science/institutions-and-elections-project.html; http://www.binghamton.edu/political-science/pdf/IAEPusersmanual.pdf; http://havardhegre.net/iaep/; https://havardhegre.files.wordpress.com/2015/06/users_manual_iaep.pdf

53 International Budget Partnership Open Budget Report/ Index http://www.internationalbudget.org/opening-budgets/open-budget-initiative/

54 International Country Risk Guide (ICRG) https://www.prsgroup.com/explore-our-products/international-country-risk-guide/; https://www.prsgroup.com/about-us/our-two-methodologies/icrg; http://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf

55 International Property Rights Index www.internationalpropertyrightsindex.org; https://shop.freiheit.org/download/P2@173/7354/ipri09.pdf

56 International Research & Exchanges Board IREX Media Sustainability Index (MSI) https://www.irex.org/projects/media-sustainability-index-msi

57 Latinobarometro (LBO) http://www.latinobarometro.org/lat.jsp

58 Lexical Index of Electoral Democracy (LIED) https://ps.au.dk/forskning/forskningsprojekter/dedere/datasets/;

https://dataverse.harvard.edu/file.xhtml?persistentId=doi:10.7910/DVN/29106/VVBYQZ&version=4.0

59 Legatum Prosperity Index www.li.com/programmes/prosperity-index; http://www.prosperity.com/

60 Logic of Political Survival Data Source www.nyu.edu/gsas/dept/politics/data/bdm2s2/Logic.htm; http://pages.ucsd.edu/~tkousser/Bueno%20de%20Mesquita%20et%20al%202003%20-%20logic.pdf

61 New Data on Autocratic Breakdown and Regime Transitions http://sites.psu.edu/dictators/

62 Parliamentary Powers Index http://www.polisci.berkeley.edu/sites/default/files/people/u3833/PPIcodebook.doc; http://polisci.berkeley.edu/sites/default/files/people/u3833/PPIScores.pdf

63 Perception of Electoral Integrity https://www.electoralintegrityproject.com/data; https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/PDYRWLI; https://sites.google.com/site/electoralintegrityproject4/home

64 Political Constraint Index Dataset (POLCON) https://mgmt.wharton.upenn.edu/faculty/heniszpolcon/polcondataset/

65 Political Terror Scale (PTS) http://www.politicalterrorscale.org/

66 Polity IV Project Data Set http://www.systemicpeace.org/polity/polity4.htm; http://www.systemicpeace.org/polityproject.html

67 Quality of Government (QoG) Expert-Survey http://www.qog.pol.gu.se/data/datadownloads/qogexpertsurveydata/; http://www.qogdata.pol.gu.se/data/qog_exp_15.pdf

68 Quality of Government (QoG) Basic Data https://qog.pol.gu.se/data/datadownloads/qogbasicdata

69 Quality of Government (QoG) Standard Data https://qog.pol.gu.se/data/datadownloads/qogbasicdata

70 Social Citizenship Indicator Programme Database http://www.spin.su.se/datasets/scip

71 Sustainable Governance Indicators https://www.sgi-network.org/

72 Sustainable Development Goals Index https://www.sdgindex.org/; https://www.unsdsn.org/sdg-index-and-monitoring; https://www.bertelsmann-stiftung.de/en/our-projects/sustainable-governance-indicators-sgi/

73 UCDP/PRIO Armed Conflict Dataset https://www.prio.org/Data/Armed-Conflict/UCDP-PRIO/

74 US State Department Trafficking in People report (TPR) https://www.state.gov/wp-content/uploads/2019/06/2019-Trafficking-in-Persons-Report.pdf

75 Vanhanen's Polyarchy dataset / Index of Democracy https://www.prio.org/Data/Governance/Vanhanens-index-of-democracy/

76 Women in national parliaments http://www.ipu.org/wmn-e/classif.htm

77 World Competitiveness Yearbook (WCY) https://www.imd.org/wcc/products/eshop-world-competitiveness-yearbook/

78 World Justice Project Rule of Law Index (WJP) http://worldjusticeproject.org/rule-of-law-index

79 World Press Freedom Index https://rsf.org/en/world-press-freedom-index

80 World Values Survey dataset http://www.worldvaluessurvey.org/wvs.jsp

81 Worldwide Governance Indicators http://info.worldbank.org/governance/wgi/

Annex 3: Variable definition and Coding

Name Description Coding Comment
QUALITY OF MEASURES (Quality sheet)
1 Code-- ID Dataset numerical identifier of the indicator/index Absolute value/figure
2 Name of the Measure Name of the indicator or index Name
3 Composition (Number of sub-indexes) Number of sub-indexes the indicator or index is composed of Absolute value/figure The number of sub-indices indicates at the complexity of the governance concept within the measure

4 Composition (Names of sub-indexes) Name of sub-indexes the indicator or index is composed of Name The labelling of sub-indices indicates at a framing exercise of the provider and introduces new conceptualisation of governance

5 Composition (Number of areas included) Number of areas, that are included in the indicator/index and in which it is structured (if the indicators/index is NOT composed of Sub-indices) Absolute value/figure The number of areas indicates at the complexity of the governance concept within the measure

6 Composition (Names of areas included) Names of areas, that are included in the indicator/index and in which it is structured (if the indicators/index is NOT composed of Sub-indices) Name The labelling of areas indicates at a framing exercise of the provider and introduces new conceptualisation of governance

7 Number of indicators of all areas Number of indicators the indicator or index is composed of Absolute value/figure

8 Governance Definition Definition of governance of state capacity used in the indicator/index Definition given by the provider Whenever no definition for 'Governance' or 'State capacity' was found, the key aim/objective/unit of the index was provided.

9 Analytical focus The indicator/index focuses on institutional and legal patterns of the respective national system(input) or on the functioning/performance of the input variables, including also respective outcome dimensions (output) or combines both. Input: 1; Output:2; Both: 0

10 Type of measure: subjective The indicator/index consists of subjective/survey data (based on perceptions of the de facto functioning of governance mechanisms) Yes: 1; No: 0

11 Type of measure: objective The indicator/index consists of objective/statistical data (obtained from statistical data or coding existing rules/using proxies based on outputs) Yes: 1; No: 0

12 Type of measure: subjective-objective mix The indicator/index consists of both subjective/survey and objective/statistical data Yes: 1; No: 0

13 Methodology: Survey of households/firms/NGO/citizenry The subjective data used is gathered through surveys of survey of households/firms/NGO/citizens Yes: 1; No: 0

14 Methodology: Academics' assessment The subjective data used is gathered through academic experts' assessment Yes: 1; No: 0

15 Methodology: Business community's assessment The subjective data used is gathered through business communities' assessment Yes: 1; No: 0

16 Usage: Ranking The indicator/index is used to rank performance, either by concrete ranking or scoring. Yes: 1; No: 0

17 Coverage Number of cases covered (countries rated, etc.) Absolute value/figure

18 Governance level The indicator/index covers all continents (global); a specific continent or region (regional); a selected nation state only (national); or a particular region in a state (local) Local: 1; National: 2; Regional: 3: Global: 4

19 Years available Number of years covered Absolute value/figure

20 Yearbegin First year the measure is available Absolute value/year

21 Yearend Last year the measure is available Absolute value/year

Political economy of PRODUCTION (PolEco sheet)

22 Name of Provider Name of the provider of the indicators/index Name

23 Type of Provider: Donor Type of the provider of the indicators/index: The Provider belongs to the international donor community Government: 1; International Financial Institution (IFI): 2; Neither: 0

24 Type of Provider: Commercial sector The provider is a private sector corporation that offers the indicator/index for sale Yes: 1; No: 0

25 Type of Provider: Research The provider is a research institution Academia 1; Think tank: 2; Foundation: 3; Mixed: 4 (more than one of the other three actors are involved); Neither: 0

26 Type of Provider: Non-Governmental Organisation (NGO) The provider is a Non-Governmental Organisation (NGO) Yes: 1; No: 0

27 Name of the Funder Name of the funder of the production of the indicators/index Name

28 Type of Funder: Ownership Type of ownership of the funder producing the indicators/index: the funder is a private, public, or mixed entity Private = 1; Public = 2; Mixed = 0

29 Type of Funder: Geo-political level of origin/reference Institutional/systemic level of origin/reference in which the entity is anchored/to which it relates to. Local = 1; National = 2; Regional = 3: Global = 4; Mixed = 0

30 Type of Funder: Corporate sector The provider is funded by a private company Yes: 1; No: 0

31 Type of Funder: Government sector The provider is funded by the government/public sector Yes: 1; No: 0

32 Type of Funder: Foundation The provider is funded by a foundation, not-for-profit Yes: 1; No: 0

33 Type of Funder: Non-Governmental Organisation (NGO) The provider is funded by a non-governmental organisation (NGO) Yes: 1; No: 0

34 Type of Funder: International Financial Institution (IFI) The provider is funded by an International Financial Institution (IFI) Yes: 1; No: 0

GEOGRAPHICAL and GEO-POLITICAL DIMENSION of the PROVIDER (GEO sheet)

35 Geographical location of the Provider: Nation state Country of origin: Country in which the official seat of the producer is located. Name

36 Geographical location of the Provider: Continent Continent of origin: Continent on which the official seat of the producer is located. Africa: 1; Americas: 2; Asia: 3; Europe: 4; Oceania: 5

37 Name of Provider Name of the provider of the indicators/index

38 Type of Provider: International Non-Governmental Organisation (INGO) The provider is an international Non-Governmental Organisation (INGO) Yes: 1; No: 0

39 Type of Provider: Multinational corporation The provider is a multinational corporation of trans-continental reach (defined as running its business on at least two continents) Yes: 1; No: 0

40 Type of Provider: Inter-Governmental Organisation (IGO) The provider is an Inter-Governmental Organisation (IGO) Yes: 1; No: 0

41 Type of Provider: International Research Group The provider is an international consortium or network of research institutions Yes: 1; No: 0

42 Geographical location of the Provider: Income Group Income group of the nation in which the official seat of the producer is located (following World Bank's 2015 classification). Low-Income countries (LIC): 1; Lower-Middle-Income countries (LMIC): 2; Upper-Middle-Income countries (UMIC): 3; High-Income countries (HIC): 4.

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EARLY CHILDBEARING AND CHILD MARRIAGE: AN UPDATE

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ABSTRACT:

Eliminating child marriage is seen by policy makers and advocates as a path towards reducing births to girls below age 18, as most early births have been previously found to occur within marriage. There has been little recent evidence, however, of the marital context in which early childbearing occurs or how this relationship varies across space and levels of development. Using survey and vital registration data covering approximately 95% of the world's births to mothers younger than 18 years, we estimated the share of first births that occur within marriage at the global, regional and national levels. We found that more than half of births to mothers below age 18 worldwide take place in sub-Saharan Africa, and this share will continue to grow. Globally, 77% of first births to mothers below age 18 occur within marriage and there are large regional differences. Over the past two decades, the share of first births to mothers below age 18 occurring within marriage declined in most countries with data available, but there are important exceptions. Although most first births to women below age 18 occur following seven months of marriage, the sequencing of child marriage and early childbearing varies widely across countries.

Introduction

The incidence of both child marriage (i.e. marriage below age 18) and early childbearing (i.e. births below age 18) can have lifelong impacts on women and their families, including but not limited to reducing years of completed education, increasing risks of adverse health and nutritional outcomes to women and children via unintended and rapid repeat pregnancies, reducing lifetime household earnings, increasing risks of intergenerational poverty, and disempowerment of women and girls (Efevbera et al., 2017; Efevbera et al., 2019; Godha et al., 2013; UNICEF, 2021; Wodon et al., 2017). These demographic patterns may also be detrimental to the wellbeing of populations by limiting the potential contributions of women and girls to economic growth, technological innovation, political leadership, and other areas. The international community has recognized the importance of eliminating child marriage and reducing early childbearing for the general well-being of populations – and for women in particular (United Nations, 1994, 2015). Consequently, indicators of child marriage (e.g. the proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18) and adolescent birth rates (i.e. births per 1000 women aged 15-19 and 10-14) are used for global monitoring of progress towards achieving two goals of the United Nations 2030 Agenda for Sustainable Development: Goal 5 – "to achieve gender equality and empower all women and girls" –, and Goal 3 – "to ensure healthy lives and promote well-being for all at all ages" (United Nations, 2015).

Countries with the highest rates of child marriage are also those with high rates of early childbearing (UNFPA, 2013), but the relationship between child marriage and early childbearing is complex as they

both are the result of many of the same underlying causes, including poverty, lack of opportunities, and cultural norms about the role of women in society (Psaki, 2016; Psaki et al., 2021), and causality between the two can be bidirectional. On the one hand, child marriage itself can lead to early childbearing via early exposure to sexual intercourse. Data from sub-Saharan Africa, for instance, show that women who were married as children had their sexual debut two years earlier than those who married as adults (Maswikwa et al., 2015). On the other hand, early childbearing may also be a result of other factors, such as limited access to sexual and reproductive health care services, including family planning, information, and education among adolescents, and child marriage may then follow unintended pregnancy at young ages. Recent evidence from Southeast Asia, for instance, has found that there is a growing share of conceptions to girls below age 18 outside of marriage that are followed by a child marriage (Harvey et al., 2022).

Previous research has shown that child marriage tends to precede a large share of births to girls below age 18. An analysis of Demographic and Health Surveys from 52 countries covering the period 1990 to 2001 found that 90% of births to girls below age 18 in low- and middle-income countries occurred within marriage (National Research Council & Institute of Medicine, 2005). Delaying child marriage has therefore been seen as one critical component for preventing early childbearing (UNFPA, 2013). There has been little evidence, however, of how the relationship context of early childbearing looks today at the global and regional levels and how it varies across a broader set of populations from various geographies and levels of economic development. Given that the incidence of child marriage has declined substantially over the last two decades (UNICEF, 2021) and that differential rates of population growth have led to shifts in the geographical distribution of girls over time (United Nations, 2002b), it is critical that researchers and policymakers have an up-to-date view of the context in which early childbearing is taking place, as these details are directly relevant to policy interventions aiming to reduce births to girls below age 18.

In this report, we provide an updated description of the marriage context in which first births to girls below age 18 occur by using the most recent survey and vital registration data for a broader set of countries than what has been used in previous research. First, we present updated estimates of the share of births to girls below age 18 occurring within marriage at the global, regional, and national levels. Then, we show how these patterns have changed over the past two decades. Finally, we analyze the timing of early childbearing with respect to child marriage in the units of months for a subset of countries with sufficiently detailed data. We conclude by discussing insights these data provide to policymakers aiming at reducing rates of both child marriage and early childbearing.

Data

As the analysis was intended to cover the broadest possible cross-section of countries, we calculated the proportion of births to girls below age 18 occurring within marriage/union from a variety of data sources. Data sources included – in order of priority – surveys from international survey programs, national surveys, tabulations from vital registration, and tabulations based on nationally representative data from peer-reviewed articles.

We preferred surveys for two reasons. First, they generally allowed for identifying the incidence of early cohabitation, which is preferred to strictly relying on dates of legal marriage. And second,

surveys could be used to identify the timing of first births with respect to union formation in the units of months. When multiple surveys were available for a single country since 2010, the most recent was selected for the analysis. We restricted survey samples to only include women who were 18 to 24 years old at the time of interview to avoid the censoring of births and marriages. That is, all women in this age group could potentially have experienced a birth and child marriage before age 18 at the time of interview. In addition, we only included in the analysis surveys in which there were at least 50 births before age 18 to women aged 18-24 at the time of interview.

The largest single source of information on early childbearing and marriage is the Demographic and Health Surveys (DHS) (ICF, 2010-2021), for which 59 countries had a survey that could be used to identify marital status at birth since 2010. Of these, we excluded four surveys due to small sample size (i.e., fewer than 50 observed births before age 18 to women between the ages of 18 and 24), ultimately resulting in the inclusion of DHS surveys for 55 countries.

For countries without a DHS since 2010, we selected data from the Multiple Indicator Cluster Surveys (MICS) (UNICEF, 2010-2021) if one was available for that period. In total, 44 additional countries had a MICS survey which could be used to identify marital status at birth since 2010. After excluding 10 surveys due to small sample size, the total number of MICS included in the analysis was 34. For a small number of countries, we used nationally representative surveys which collected data on fertility and marriage in a similar manner as international survey programs. Examples of these included the National Survey of Family Growth for the United States, the Encuesta Nacional de la Dinámica Demográfica for Mexico, and the Family Health Survey for Djibouti (see Appendix Table A1 for complete list of surveys included in the study).

When no survey data were available for a country, birth registration data for the most recent calendar year were used as long as they were tabulated by single age of mother and marital status. Birth registration data was used for 17 countries, primarily from Europe, Eastern Asia, and South America. When possible, we derived estimates from data on first births by marital status, although in some cases birth data were not disaggregated by birth order. Among the 17 countries, four reported data specifically on first births (Brazil, Chile, Japan, Spain).

China was the only country for which data were used from a peer-reviewed study (Xie et al., 2021). These data were based on China's National Maternal Near Miss Surveillance System and covered 30 provinces of mainland China.

In order to generate regional and global aggregates from the country-level estimates, we weighted the proportions of births occurring within marriage with the estimates of the number of births to girls below age 18 for the year 2015 from the 2022 revision of the World Population Prospects (United Nations, 2022b). World Population Prospects estimates fertility rates by 5-year age groups using a Bayesian hierarchical time series model fit to empirical estimates of fertility rates and then graduated into single age rates using the Calibrated Spline method (Schmertmann, 2014). The estimated rates were then used in the cohort-component projection to determine births by single age of the mother, together with the reconstructed female population by single age.

The data used to calculate the proportion of first births below age 18 are publicly available at the Demographic and Health Survey website (https://dhsprogram.com/), the Multiple Indicator Cluster

Survey website (https://mics.unicef.org/), and the websites of respective national statistics agencies listed in Appendix Table A1. Data on the number of births below age 18 are available for download on the United Nations Population Division Data Portal (https://population.un.org/dataportal/home).

In total, data from 106 countries were used in the analysis (see Appendix Table A1). Weighting these by the country-specific proportion of the estimated number of births to girls below age 18 worldwide from World Population Prospects 2022, we estimate that the countries included in the compiled dataset account for approximately 95% of the births below age 18 occurring worldwide (Table 1). At the regional level, the broadest coverage achieved was for sub-Saharan Africa, where representative survey samples covered over 98% of births, and the lowest coverage was for Australia/New Zealand and Northern America and Europe for which coverage was 72% and 73% of births below age 18, respectively. In all other regions, 85% or more of the estimated births were covered by the dataset with either nationally representative surveys or vital registration statistics.

(Table 1 here)

Methods

The main quantity of interest in this study is the proportion of first births to girls below age 18 years that occur within a marriage or union. For countries with survey data, we used retrospective information on the dates of marriage and first birth. For first births occurring to women before they turned age 18, these dates were compared to identify the proportion occurring within marriage/union. The provided sample weights were used in all calculations from surveys.

For countries with only vital registration data available, we calculated the proportion of births occurring within marriage/union as the number of births below age 18 to girls who were married/in-union divided by the total number of births to girls below age 18. If the number of births was disaggregated by live birth order, only counts of first births by marital status were used for the calculation. Countries for which vital registration data were used generally have low rates of childbearing below age 18. Thus, the inability to distinguish by birth order in these cases should not have a substantial impact on aggregate estimates, although national estimates may be biased in either direction. In the countries with information on birth order, the share of higher order births that were to unmarried girls varied widely: In Japan and Brazil, about 40% of births at parities 2 and higher were to unmarried girls, while in other countries the shares were much higher (60% in Spain, 70% in Ecuador, and 98% in Chile).

For 21 countries, surveys either only sampled ever-married women or only asked questions about fertility to ever-married women. All of these countries were in Western Asia and Northern Africa and South and South-eastern Asia. In order to estimate the percentage of first births to girls below age 18 that occur within marriage for all women in these countries, we estimated the following linear regression:

$P\_A=\beta\_0+\beta\_1\ 〚P\_E〛\_s+X\_s\ \gamma+\varepsilon\_s$

where:

P_A= the percentage of births below age 18 to all women that occur within marriage for survey s

P_E= the percentage of births below age 18 to ever-married women that occur within marriage for survey s

X = covariates for the: (1) year of the survey s, (2) proportion of 15–19 year-old girls and women who were married/in-union in the year of survey s to account for differences in marriage patterns between countries (United Nations, 2022a), and (3) a dummy variable for the survey program (i.e. MICS or DHS) for survey s. The covariates for the year of survey and proportion of 15-19 year-old girls who were married were both operationalized as continuous variables.

Both PA and PE were expressed as a proportion and then transformed using the logit transformation ln(P/(1-P)) to account for the fact that the proportion is a continuous variable bounded between 0 and 1. The intuition behind using a modelling approach was that there are a large number of surveys for which we can calculate the percentage of births within marriage for both ever-married women and all women separately. Furthermore, the surveys which only reported data on ever-married women have all of the right-hand side variables available. Together these allowed us to first model the relationship and then to predict the estimates for all women for those countries where only data from ever-married women are available. As input data for our model, we used the latest MICS and DHS surveys since 2010 and all DHS surveys between 1995 and 2009, which together amounted to 166 observations used in the model. In total, the model was able to explain nearly 95% of the variance (R2=0.95) in the percentage of births to all women below age 18 within marriage (see Appendix for further details on the estimation of the model).

To calculate regional and global estimates of the proportion of first births to girls below age 18 occurring within marriage/union (PR), the proportion of the regional or global births accounted for by a given country (wc) was used to weight the proportion of first births within marriage/union for that country (Pc). These values were then summed to generate the proportion of births to girls below age 18 occurring within marriage/union for the given level of aggregation:

TREATING PERSISTENT PAIN: A NURSE CO-LED, INTERDISCIPLINARY MODEL FOR PRIMARY CARE

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ABSTRACT:
The public health crisis of chronic pain has only increased in recognition since the Institute of Medicine's (IOM) Relieving Pain in America (2011) called for a cultural transformation in the way pain is viewed and treated and put forward specific recommendations for action. The National Pain Strategy (NPS) provides a roadmap for putting these recommendations into practice. We implemented a program that placed nurses and behavioral specialists at the head of an interdisciplinary team utilizing best practices. In this program, nurses enacted the NPS recommendations to advance care for patients with persistent pain on long-term opioid treatment. This program promoted professional growth in nurses along with fostering success for patients. Compared to patients receiving usual care, patients in the program achieved greater reductions in pain severity, pain-related disability, and pain-related functional interference and reported greater satisfaction with pain-related care and primary care services. This article will detail the NPS-aligned practice approaches these nurses and their teams used, describe the training for the nurses, and speak to opportunities to enhance the nurse's capacity for this role in hopes of providing a model for the future implementation of an NPS-based approach by nurses.

Introduction

In 2011, the Institute of Medicine (IOM) published Relieving Pain in America, a call to action specifying the need for a cultural transformation in the way pain is viewed and treated (IOM, 2011, p. 44). This report outlined our moral imperative to view persistent pain as a disease in and of itself, to utilize known best practices such as comprehensive, interdisciplinary approaches, and for clinicians to expand their familiarity with and use of existing knowledge. In 2016, the Interagency Pain Research Coordinating Committee (IPRCC), established under the US Department of Health and Human Services, published the National Pain Strategy (NPS) (IPRCC, 2016). The NPS set forth a vision to advance all recommendations made by the IOM report, outlining a roadmap for achieving pain care that is biopsychosocial, grounded in scientific evidence, integrated into the healthcare system, and interdisciplinary, while personalized to each individual patient's needs (IPRCC, 2016, p.5). The NPS sets forth specific goals, providing clear steps for improved pain care. These recommendations include administering a comprehensive, interdisciplinary assessment leading to a patient-centered plan of

care, training clinicians on biopsychosocial contributors to and management of pain, implementing team-based self-management programs for patients, and integrating interdisciplinary, evidence-based care into the health care system.

In recognizing that shifting the paradigm of pain care relies on research to identify care innovations, the IPRCC put forward the Federal Pain Research Strategy (FPRS). Among the FPRS' top priorities was developing, evaluating, and improving models of pain care (Gatchel et al., 2018). Specifically highlighted in this research priority was establishing models of integrated care with team-based delivery.

The Pain Program for Active Coping and Training (PPACT), an interdisciplinary biopsychosocial program implemented in three regions of Kaiser Permanente —Northwest, Hawaii, and Georgia as part of a pragmatic clinical trial (DeBar et al., 2018)—provides an exemplar for operationalizing the recommendations set forth by the NPS and a key research priority of the FPRS. The program, targeting individuals with persistent pain on long-term opioid therapy and embedded in the primary care environment, brought together a team of nurses, behavioral specialists, physical therapists, pharmacists, and primary care providers (PCPs) to help patients actively integrate pain self-management skills into their daily lives. The program used a comprehensive assessment to inform a patient-centered plan of coordinated care. An interdisciplinary team worked with the patient and his/her PCP over a course of four months to enact the plan of care through partnership with the patient. As leads of the interdisciplinary team, nurses and behavioral specialists underwent a multi-faceted training to ensure proficiency in the practices and skills taught in the program.

Investigations regarding interdisciplinary care for persistent pain management recognize the importance of the nurse's role on the team (Broderick et al., 2014). Williams (2017) outlined the importance of the nurse in actualizing the NPS, exploring the nurse's potential role in identifying and implementing its recommendations and goals. PPACT demonstrated how nurses, serving on an interdisciplinary team, provided care in line with the NPS recommendations to enhance care for patients with persistent pain. This article will detail the practice approaches the nurses and interdisciplinary teams used, describe the training for the nurses, and speak to opportunities to enhance the nurse's capacity for this role. We hope to provide a model for future implementation of an NPS-based approach by nurses.