Sozial- und Präventivmedizin Médecine sociale et préventive 30, 260 – 261 (1985)

3D Display of Stillbirth in Indonesian Obstetrics Part 5: Parity and Residence versus Antenatal Visits

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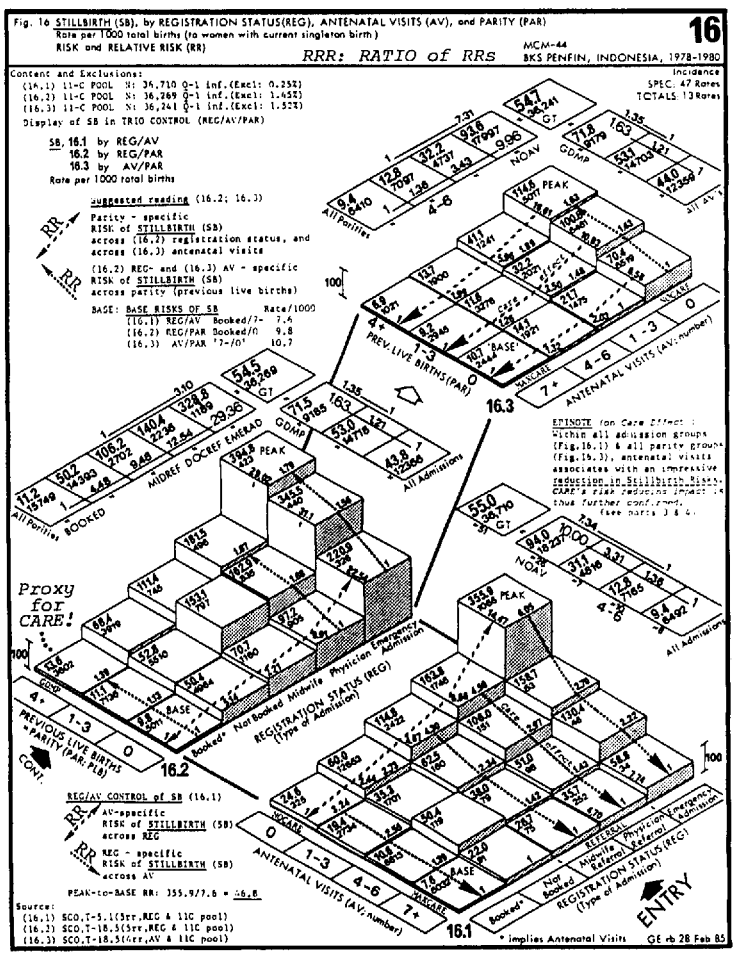
Introduction

In four previous reports in this journal, the risk of stillbirth (SB) in Indonesian university obstetrics for 36,802 singleton-birth deliveries from 1978-1980 was displayed in a "closed six-variate control system" (*SEXTET*) for (a) birth weight, (b) complication of delivery, (c) maternal morbidity, (d) registration status, (e) antenatal visits, and (f) contraceptive use. Antenatal visits (AV, CARE) emerged as the leading determinant of fetal survival (1). This report examines the *care effect* in a new *QUARTET control system* for (d) registration status, (e) antenatal visits, (g) parity (previous live births), and (h) residence of the parturient. It is hypothesized that the *care effect* persists within all categories of the three other control variables.

Material and Method

The material and method remains unaltered. However, the six 6 theoretical dual control combinations are fitted into only two panels together with the strategy/inventory of studied relationships. The 6 figures were developed from *secondary calculations* by using *isometric paper*. The background information as well as the succinct reading (EPINOTES) are programmed into the figures.



Results

The six possible bivariate control combinations of the (HOSP) risk of SB are depicted in the two figures.

Previous live births (Parity)

Fig. 16 gives risks of stillbirth in trio-control for registration status, antenatal visits, and parity. For both *lack of antenatal visits* (Fig. 16.1) and *grandmultiparity* (Fig. 16.2), the type of hospital admission (registration) governs the SB risk level. For instance, among grandmultiparous women, the SB RISK CHAIN reaches from the peak risk of 394.8/1000 for emergency admission down to 13.6/1000 for booked cases - a 29-fold gradient. Similarly, among women with NOCARE, the SB RISK CHAIN reaches from 355.9/1000 down to 24.6/1000 - an over 14-fold variation. Clearly, the hospital risk of stillbirth is governed mainly by the type of admission with the lowest risk pertaining to booked cases - that imply some form of antenatal visits - and the highest risk level being associated with emergency admissions, of course.

By closing the control system, one may then learn which of the *three factors* predominantly governs the SB RISK. As shown in Fig. 16.3, antenatal visits emerges as the 'winner' over parity. One ratio of relative risks (RRR) is 10.93/1.43 = 7.64 in favor of antenatal visits (*care effect*). In confirmation, as shown in Fig. 16.1, within each registration category, the SB RISK decreases steeply with increasing number of antenatal visits. For example, among emergency admissions the risk of 355.9/1000 associated with NOCARE drops to 58.8/1000 if associated with 7+ antenatal visits - a RR of 6.05. For the referral categories, the RRs are 4.59 (physician referrals) & 4.30 (midwife referrals). Finally, among booked cases, the quantity of antenatal visits is still associated with a RR of 3.24. In sum, within each admission category, it is primarily CARE (and not parity) that governs fetal survival. The implications are commanding.

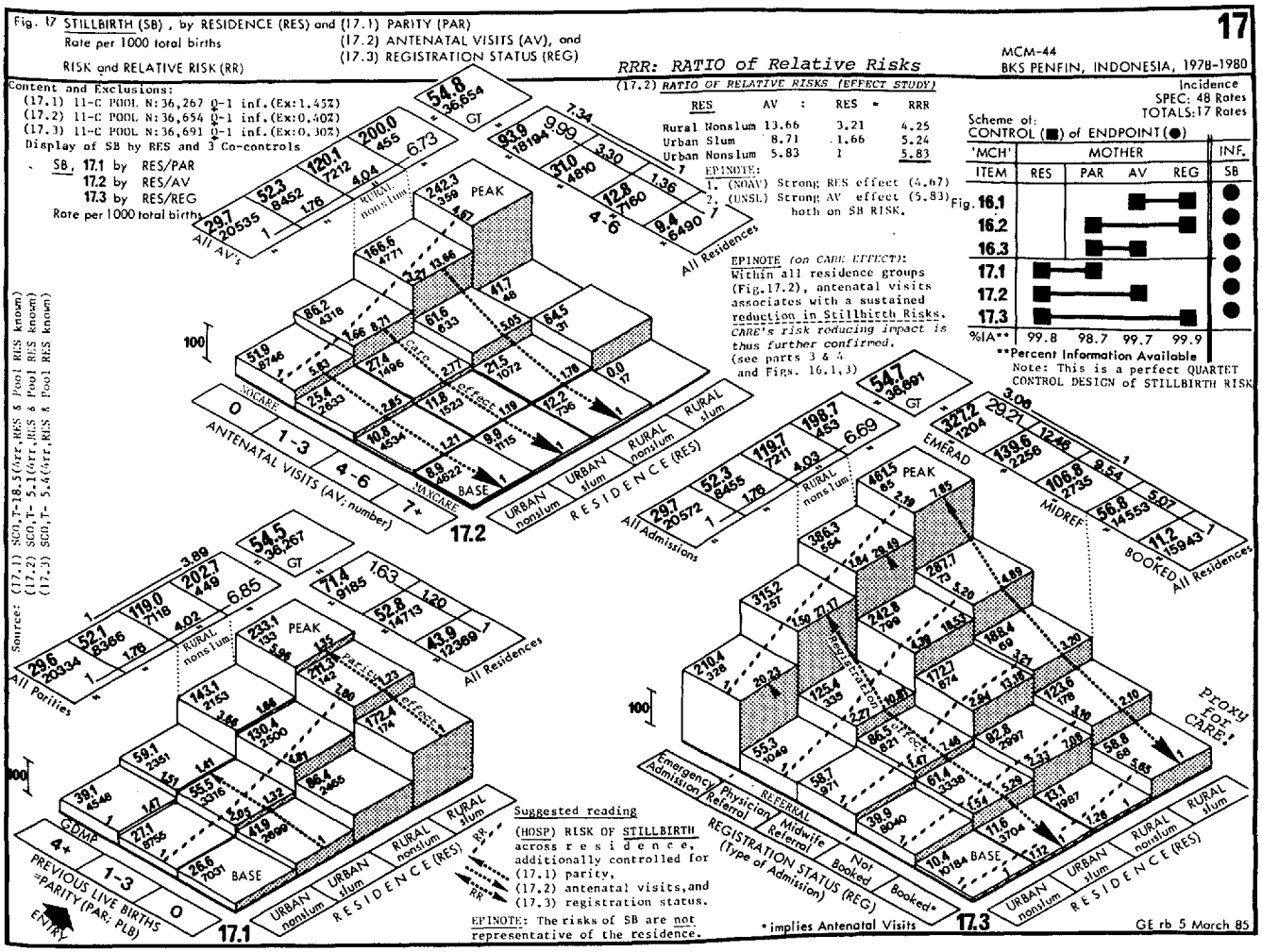
Residence

Fig. 17 gives then the risk of (HOSP) SB *by residence* and in cocontrol for parity (Fig.17.1), antenatal visits (Fig.17.2) and type of admission (Fig. 17.3). In other words, the *trio-controlled* SB risk (Fig. 16) is expanded into a perfectly *closed tetravariate control system* (*QUARTET*), thus enabling the verification of the AV effect against the patients' residence.

Parity is again a 'loser', this time not against AV and REG (Figs. 16.3/2), but against the parturients' residence, as shown in Fig.17.1. For instance, the ratios of relative risks (RRR) are in favor of residence against parity among rural *slum* dwellers (5.96/1.35 = 4.41) as well as among rural *non-slum* dwellers (3.66/1.66 = 2.20).

Antenatal visits (CARE), by contrast, is again the winner, this time against the parturients' residence, as shown in Fig. 17.2, the RRRs being calculated as 4.26 (13.66/3.21), 5.25 (8.71/1.66) and 5.83, respectively.

The key confrontation then is to control for both the parturients' residence and their type of admission (registration). These two factors obviously govern the 'admission mix' and hence the (HOSP) risks of stillbirth (and other deaths).



To our knowledge, this specific confrontation was never published. As shown in Fig. 17.3, beautiful gradients 'flow' in both directions. The peak risk of 461.5/1000 pertains to *emergency admissions from rural slum,* the base risk of 10.4/1000 to *booked cases from urban nonslum* - a diagonal (bivariate) relative risk of 44.4! 27.8% of all deliveries carried the 'base risk' against 0.2% carrying the 'peak risk'. Within residence groups, the ratios of RRs tip generally in favor of *registration status*. For instance, RRs of SB for rural non-slum residence across *registration status* may be confronted (put to ratio) with the corresponding RRs of SB across *residence*. These RRRs tip all in favor of a strong *registration effect* on SB risk: 16.03(29.49/1.84); 4.22 (18.53/4.39); 4.48(13.18/2.94); and 3.04(7.08/2.33). Booked cases (implying antenatal care) from rural nonslum (13.1/1000), urban slum (11.6/1000) and urban nonslum (10.4/1000) carry the lowest SB risks and pertain to 43.3% of all hospital deliveries with an aggregate SB risk of 11.0/1000 (175/15,875). It appears thus, that pregnancy care in terms of antenatal visits has similar SB risk reducing effects among *urban women* living in slum or non-slum habitats as among *'non-slum habitat'* women living in urban or rural habitat areas. The university centers' MCM system thus *monitors* intervention/behavioral effects for the broad catchment area. Hence, MCM graduates into a potential *evaluation tool* of the the nation's status of maternal and child health (MCH).

Summary and Outlook

Analysis of (HOSP) stillbirth risks by (d) type of admission, (e) antenatal visits, (g) parity, and (h) residence in a complete *QUARTET CONTROL MODEL* confirms *booking* (2) and *antenatal visits* (1) to be the main determinants of fetal survival, both inputs pertaining to pregnancy care. In this model, 27 out of 29 control categories show a strong *care effect*, the two notable exceptions remaining P1. abruptio & very low birth weight.

Zusammenfassung und Ausblick

Analyse der Totbegurten an den Universitätsfrauenkliniken in Indonesien nach (d) Klinikaufnahme, (e) Schwangerschaftsbetreuung, (g) Parität, und (h) Wohnort in einem *geschlossenen QUARTETT* Kontrollmodell bestätigt die *Voranmeldung* (2) und *Schwangerschaftsbetreuung* (1) als die wichtigsten Determinanten des fötalen Ueberlebens, wobei *beide* Leistungen Schutz & Pflege während der Schwangerschaft bedeuten. Im ganzen Modell der Totgeburtenrisiken findet sich in 27 von 29 Teilvergleichen eine eher starke Beziehung zwischen mangelnder Betreuung und Totgeburt, wobei die zwei auffälligen Ausnahmen Placenta abruptio und sehr niedriges Geburtsgewicht bleiben.

Résumé et Perspective

L'analyse de la mortinatalité des départements universitaires d'obstétrique en Indonésie selon (d) le type d'admission, (e) les consultations prénatales, (g) la parité et (h) le domicile - dans un modèle de contrôle fermé (*QUATUOR*) -, confirme *la réservation du lit d'hôpital* (2) ainsi que les *consultations prénatales* (1) comme les déterminants les plus importants pour la survie fétale. Les *deux* prestations se résument aux soins de grossesse. Pour ce modèle, la survie fétale tardive est fortement liée aux consultations prénatales pour 27 sur 29 comparaisons partielles - les deux exceptions notables étant l'hémorrhagie rétroplacentaire et le très faible poids à la naissance.

References

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