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**Maternal near-miss and mortality associated with being referred: a case control study in Luanda**

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**Background:** Understanding of determinants of severe maternal morbidity is crucial for reducing Maternal Near Misses (MNM) and Maternal Deaths (MD). We aimed to assess whether being referred from lower level to tertiary-level hospitals is a determinant of MNM and MD in Luanda, capital of Angola.

**Methods:** A facility-based case control study was conducted (June-September 2022) at 2 referral hospitals in Luanda. Consecutive sampling for the cases (women admitted with life-threatening conditions) and systematic sampling for the controls (women admitted for vaginal delivery) was used. Cases were classified by the outcome at discharge: MD or MNM. Multivariate multinomial regression was conducted to assess whether being referred is associated with MNM and MD (controls as reference). Sociodemographic, clinical and obstetric factors and circumstances at admission related with MNM or MD (p-value <0.05) were included in the models. Reduced models (forward technic) were fitted for obtaining adjusted odds ratio (AOR) and respective 95% confidence interval (95%CI).

**Results:** Data from 331 cases (245 MNM and 86 MD) and 662 controls were analyzed and bivariate analysis revealed large differences between groups in regards to the sociodemographic, clinical

and obstetric characteristics and circumstances of admission. The proportion of being transferred from another facility was 7.9%, 51.0% and 65.1% among controls, MNM and MD, respectively. After adjusting for pre-existing diseases during pregnancy, previous cesarean section and delay in seeking care, being referred from another facility increased the odds of MNM (AOR=10.97; 95%CI: 7.19-16.75) and MD (AOR=18.89; 95%CI: 10.50-33.89).

**Conclusions:** According to our findings, being referred from lower level facilities is a strong determinant of MNM and MD. Strategies for improving lower level of healthcare services and the referral system for pregnant women could have a positive impact on prevention of MNM and MD in our setting.

**Key messages:**

- Awareness should be given to the conditions of maternal transfer from lower level to tertiary level hospitals in Angola.
- Public health strategies should address the quality of maternal care at primary and secondary level hospitals, before maternal transfer, as well as, the maternal referral system in this setting.