Semra Worrall, Dr Victoria Fallon, Prof Paul Christiansen, Prof Asma Khalil, Sergio A. Silverio - Written evidence (PRT0054)

Executive Summary

1. Preterm birth has variable psychological impacts on maternal health. The consideration of postpartum anxiety within this context has typically been overshadowed by postpartum depression.

2. Of the limited research which has considered postpartum anxiety within the context of preterm birth, they have been limited by the use of anxiety measures that were designed for general adult populations, and so do not consider anxieties unique to motherhood.

3. In 2016, the Postpartum-Specific Anxiety Scale [PSAS] was created. The 51-item measure assesses maternal- and infant-focused anxieties occurring during the previous seven days. Two research short-forms (16-item [PSAS-RSF]; 12-item for use during global crises [PSAS-RSF-C]) have also been developed.

4. Since 2020, we have been the first and only group to use the PSAS and the PSAS-RSF to specifically investigate anxiety in mothers of preterm infants from birth to 12 months postpartum. Areas for specifically targeted intervention can be identified, which is not possible with other measures. We have been able to identify that anxieties may be differential depending upon category of prematurity.

5. More recently, our work has identified particular items on the PSAS-RSF that are not being interpreted in the same manner in mothers of premature infants as there are in term infants. This will further inform modification of the PSAS-RSF for use in mothers of premature infants to ultimately improve outcomes.

We provide a point-by-point expansion of the above executive summary below.

Evidence:

1. **Preterm birth has variable psychological impacts on maternal health. The consideration of postpartum anxiety within this context has typically been overshadowed by postpartum depression.**

It is well established that mothers who give birth prematurely are more likely to develop postpartum depression.[1] Various studies have also suggested anxiety is more prevalent in women who have given birth preterm comparative to their term counterparts,[2] but this is comparatively less studied. Common anxieties are usually surrounding feeding,[3] the unexpectedness of the birth,[4] and health and developmental concerns.[4] These anxieties may be further exacerbated if an infant has been hospitalised for some period after birth, and so may require increased psychological support.[5]

2. **Of the limited research which has considered postpartum anxiety within the context of preterm birth, they have been limited by the use of anxiety measures that were designed for general adult populations, and so do not consider anxieties unique to motherhood.**

Of the studies which have considered anxiety within the context of preterm birth, the majority use measures which were originally designed for use in general adult populations. These include the State Trait Anxiety Inventory [STAI],[6] and the Generalized Anxiety Disorder 7-item [GAD-7].[7] This is and remains problematic. Firstly, these measures were originally designed and validated for general adult populations and, as such, items do not reflect the unique context of motherhood. For example, the STAI lists *"I feel rested"* as an item on the scale of which a

low score would be indicative of anxiety, despite lack of sleep being common in early motherhood,[8] irrespective of anxiety. Therefore, it is possible scores on the STAI may produce artificially inflated findings when used in the context of this period. Secondly, these measures do not consider anxieties unique to motherhood, such as concerns surrounding infant health or routine care. However, the use of these generalised measures persists, despite mixed evidence as to their efficacy, as there have been no other more suitable alternatives.[9]

3. **In 2016, the Postpartum-Specific Anxiety Scale [PSAS] was created. The 51-item measure assesses maternal- and infant-focused anxieties occurring during the previous seven days. Two research short-forms (16-item [PSAS-RSF]; 12-item for use during global crises [PSAS-RSF-C]) have also been developed.**

In response to the lack of appropriate anxiety measures for postpartum women, the Postpartum Specific Anxiety Scale [PSAS][9] was developed. The original measure has 51-items that assess maternal- and infant-focused anxieties occurring during the last week. The measure also has four subscales which can be scored separately: *Maternal Competence and Attachment Anxieties* measures concerns surrounding maternal efficacy and bonding; *Infant Safety and Welfare Anxieties* encompass worries about accidental harm to the infant; *Practical Infant Care Anxieties* consist of anxieties surrounding routine care of the infant; *Psychosocial Adjustment to Motherhood* measures concerns surrounding change in relationships and finances. The PSAS has been shown to predict unique variance above and beyond general measures of anxiety,[10] and may be able to assess specific experiences which cause a differential anxiety response. Current, general measures of anxiety are unable to assess these specific experiences, nor replicate such findings. There are also two short-forms of the PSAS – a 16-item Research Short-Form [PSAS-RSF],[11]

and a 12-item Research Short-Form for use during global Crises [PSAS-RSF-C].[12] Both have an identical four-factor structure as the original measure.

4. **Since 2020, we have been the first and only group to use the PSAS and the PSAS-RSF to specifically investigate anxiety in mothers of preterm infants from birth to 12 months postpartum. Areas for specifically targeted intervention can be identified, which is not possible with other measures. We have been able to identify that anxieties may be differential depending upon category of prematurity.**

In 2023, we published the first research to use the PSAS looking at anxiety in mothers of premature infants in particular. We identified that, whilst there was no association between prematurity and depressive symptoms, when gestational age was split into extremely premature (<28 weeks' gestation), premature (28-36 weeks' gestation), and term (37+ weeks' gestation), mothers of extremely premature infants had higher *Infant Safety and Welfare Anxieties,* whereas mothers of the premature group had higher *Practical Infant Care Anxieties.*[13] More recent work has also supported a differential anxiety response dependent upon category of gestational age.[14] Importantly, we recommend consideration of interventions addressing differential anxieties across categories of gestational age, particularly in mothers whose infant has been admitted to the neonatal intensive care unit [NICU].[13,14]

5. **More recently, our work has identified particular items on the PSAS-RSF which are not being interpreted in the same manner in mothers of premature infants as there are in term infants. This will further inform modification of the PSAS-RSF for use in mothers of premature infants to ultimately improve outcomes.**

Following on from the initial work published (as discussed above), we sought to investigate if postpartum anxiety as assessed by the PSAS-RSF was conceptually similar across mothers of term and premature infants, that is, whether items are being interpreted in the same manner. We identified specific items on the current version of the PSAS-RSF that are not being interpreted in the same manner by mothers of premature infants.[15] These items concern infant-separation, accidental harm to the infant, routine infant care concerns, and anxieties surrounding finances.[15] This will further inform future work to adapt the PSAS-RSF for use in mothers of premature infants.

Reference List:

1. de Paula Eduardo JAF, de Rezende MG, Menezes PR, Del-Ben CM. Preterm birth as a risk factor for postpartum depression: A systematic review and meta-analysis. *J Affect Disord*. 2019;259:392-403. doi:10.1016/j.jad.2019.08.069
2. Trumello C, Candelori C, Cofini M, et al. Mothers' Depression, Anxiety, and Mental Representations After Preterm Birth: A Study During the Infant's Hospitalization in a Neonatal Intensive Care Unit. *Front Public Health*. 2018;6(359):1-9. doi:10.3389/fpubh.2018.00359
3. Mörelius E, Kling K, Haraldsson E, Alehagen S. You can't flight, you need to fight-A qualitative study of mothers' experiences of feeding extremely preterm infants. *J Clin Nurs*. 2020;29(13-14):2420-2428. doi:10.1111/jocn.15254
4. Hua W, Zhou J, Wang L, et al. 'It turned my life upside down': Parents' emotional experience of the transition with their preterm infant from birth to discharge home – A qualitative study. *Aust Crit Care*. 2023;36(5):679-686. doi:10.1016/j.aucc.2022.10.007

5. Bry A, Wigert H. Psychosocial support for parents of extremely preterm infants in neonatal intensive care: a qualitative interview study. *BMC Psychol*. 2019;7(76):1-12. doi:10.1186/s40359-019-0354-4
6. Spielberger CD, Gorsuch RL, Lushene R, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press; 1983.
7. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med*. 2006;166(10):1092-1097. doi:10.1001/archinte.166.10.1092
8. Insana SP, Stacom EE, Montgomery-Downs HE. Actual and perceived sleep: associations with daytime functioning among postpartum women. *Physiol Behav*. 2011;102(2):234-238. doi:10.1016/j.physbeh.2010.11.017
9. * **Fallon V,** Halford JCG, Bennett KM, Harrold JA. The Postpartum Specific Anxiety Scale: development and preliminary validation. *Arch Womens Ment Health*. 2016;19(6):1079-1090. doi:10.1007/s00737-016-0658-9
10. * **Fallon V,** Davies SM, **Christiansen P,** Harrold JA, **Silverio SA.** The Postpartum Specific Anxiety Scale: Confirmatory factor analyses and relationships with birth experience. *Arch Womens Ment Health*. 2022;25(3):655-665. doi:10.1007/s00737-022-01233-9
11. * Davies SM, **Christiansen P,** Harrold JA, **Silverio SA, Fallon V.** Creation and validation of the Postpartum Specific Anxiety Scale Research Short-Form (PSAS-RSF). *Arch Womens Ment Health*. 2021;24(6):957-969. doi:10.1007/s00737-021-01114-7
12. * **Silverio SA,** Davies SM, **Christiansen P,** […], **Fallon V.** A validation of the Postpartum Specific Anxiety Scale 12-item research short-form for use during global crises with five translations. *BMC Pregnancy Childbirth*. 2021;21(112):1-12. doi:10.1186/s12884-021-03597-9

13. * **Worrall S, Silverio SA, Fallon V.** The relationship between prematurity and maternal mental health during the first postpartum year. *J Neonat Nur.* 2023;29(3):511-518. doi:10.1016/j.jnn.2022.10.002

14. * **Worrall S, Christiansen P, Khalil A, Silverio SA, Fallon V.** Associations between prematurity, postpartum anxiety, neonatal intensive care unit admission, and stress. *Front Psychiatry*. 2024;15(1323773):1-13. doi:10.3389/fpsyt.2024.1323773

15. * **Worrall S, Christiansen P, Khalil A, Silverio SA, Fallon V.** Measurement invariance analysis of the Postpartum Specific Anxiety Scale - Research Short Form in mothers of premature and term infants. *BMC Res Notes*. 2024;17(75):1-9. doi:10.1186/s13104-024-06746-3

N/B. References marked with an asterisk [*] represent research published by **members of the team** submitting evidence.

27 March 2024