Psychological Outcomes Among Women Pursuing Trio-Exome Sequencing (ES) in the Setting of Recurrent Anomalous Fetal Phenotypes

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Background

- Trio-ES in the setting of fetal anomalies and negative standard genetic testing (karyotype and microarray) provides opportunity to improve diagnostic yield.
- Women with anomalous pregnancies have significant psychosocial needs.
- Little is know about parental psychological impact of adding next generation sequencing to prenatal diagnostic odyssey, particularly among parents with multiple affected pregnancies.

Objective

- To describe psychological outcomes among women with recurrent fetal phenotypes pursuing trio-ES for genetic diagnosis compared to women with one affected pregnancy.

Methods

- Prospective cohort of an enrolling ES study

INCLUSION	EXCLUSION
Any major fetal anomaly Normal microarray Received genetic counseling	Inability to perform Trio-ES If participants decline to learn: (1) Findings explain fetal phenotype (2) medically actionable secondary findings (e.g. BRCA) (3) carrier couple status for significant autosomal recessive conditions

Methods

- Women completed validated surveys and free responses pre and post-sequencing.
- Descriptive statistics used to compare women with one affected pregnancy to those with multiple affected pregnancies.
- Brief free response content was analyzed using grounded theory methods.

Results

- 177 trios enrolled to date with 123 sequenced.
- 30 (24.4%) had recurrent anomalous fetal phenotypes.
- 11 (36.7%) received results that explained the fetal findings; diagnostic yield in cohort overall is 31.7%.
- Identified themes included: (1) Altruism, (2) Identify Specific Cause, (3) Coping, (4) Future Genetic Testing, and (5) Family Health.
- Those with multiple affected pregnancie were more likely to report uncertainty (Table 2).

Table 1. Demographic Characteristics

	Single Affected (n=93)	Multiple Affected (n=30)	P Value
Age (Mean, SD)	30 (5.3)	31 (4.3)	0.5
Caucasian Race	110 (74.8)	25 (83.3)	0.9
Married	96 (80.1)	27 (90.0)	0.2
≥ College Education	100 (68.0)	24 (80.0)	0.2
Employed	74 (62.7)	20 (66.7)	0.7
Income > $75,000	67 (45.6)	19 (63.3)	0.08
Previous Genetic Testing	65 (59.6)	17 (56.7)	0.8

[a]Data as n(%) unless noted otherwise.

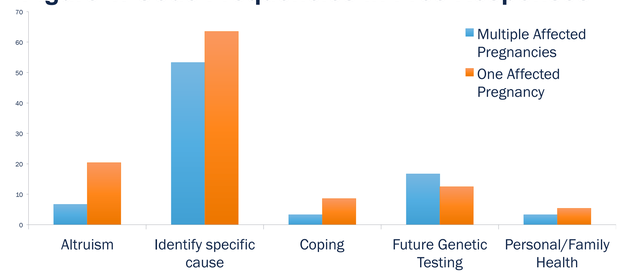
Results

Table 2. Pre and Post Sequencing Scales

Test	Multiple affected pregnancies	One affected pregnancy	P value
GKS	21 (2.5)	21 (2.8)	0.68
At least 1 future child desired n(%)	26 (87)	95 (87)	0.61
HADS – pre			
Anxiety	7.3 (4.2)	7.8 (4.1)	0.59
Depression	4 (4.5)	4.1 (3.8)	0.91
Total	11.4 (8.2)	11.8 (7.0)	0.79
MICRA			
Distress	6.8 (6.4)	4.4 (5.7)	0.10
Uncertainty	12.4 (8.0)	9.6 (4.3)	0.03
Experience	9.8 (2.9)	11 (3.1)	0.11
Total	36.1 (19.4)	28.9 (10.6)	0.03
HADS-post			
Anxiety	5.4 (3.6)	4.7 (3.1)	0.42
Depression	2.8 (3.7)	1.5 (2.5)	0.06
Total	7.1 (5.3)	6.3 (2.1)	0.18
DCS	81 (4.8)	82 (4.4)	0.36

[a]Data presented as mean (SD) unless noted otherwise
[B]GKS: Genomics Knowledge Scale; HADS: Hospital Anxiety Depression Scale; MICRA: Multidimensional Impact of Cancer Risk Assessment; Decisional Conflict Scale.

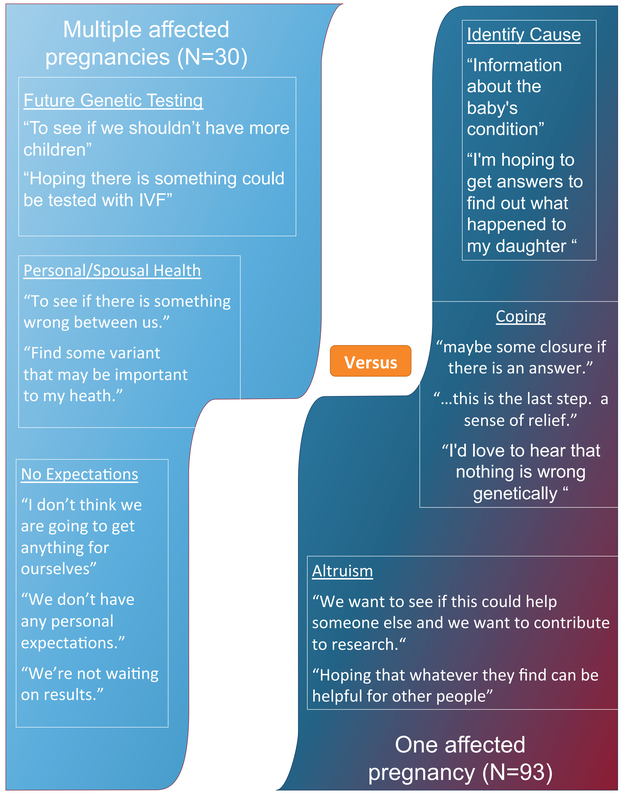
Figure 1. Code Frequencies in Free Responses



[a]Free responses regarding motivations to pursue ES were generated from the following prompt: (1) In your own words, what is the main thing you expect to get out of genomic sequencing?

Results

Figure 2. Themes and Supporting Quotes



Conclusions

Women pursuing ES in the setting of recurrent anomalous fetal phenotypes may pursue sequencing for different reasons than women with a single affected pregnancy and may be more impacted by test-related uncertainty.

Funding Source: K23HD088742 (PI VORA) Department of Obstetrics and Gynecology, Division of Maternal-Fetal Medicine — The University of North Carolina at Chapel Hill School of Medicine and UNC Health Care