



INTRODUCTION

- Short stature is a major issue in girls with Turner syndrome (TS)[1]. Girls with Turner syndrome have delayed puberty[2].
- Hypothesis : Delayed puberty & short stature in girls with TS can lead to low body image, self-perception & satisfaction.
- There is a paucity of research on body image, self perception and satisfaction in adolescents with TS in the United States.

OBJECTIVES

- To evaluate body image, self-perception and satisfaction among girls with Turner syndrome using the Multi-Dimensional Body Image Self Relations-Appearance Scale Questionnaire (MBSRQ-AS).

METHODS

- Study design :** Prospective cross-sectional study
- Study period :** December 1, 2019, to December 31, 2020.
- Study setting :** Tertiary care institution in Atlanta
- Study instrument :** MBSRQ-AS
- Informed consent/assent were obtained from all participants.
- The study was approved by the Institutional Review Board of Children's HealthCare of Atlanta.

MBSRQ-AS

- MBSRQ-AS is a 34-item Likert scaled instrument with 5 sub-scales: Appearance Evaluation(AE), Appearance Orientation(AO), Body Areas Satisfaction (BASS), Overweight Preoccupation(OWP), Self Classified Weight(SCW).
- This instrument is available for use in ages 15 years and above[3].

- Reference mean scores with standard deviation are available in the users' manual[3].
- Lower scores on AE and BASS subscales and higher scores on AO, OWP, SCW subscales indicate body image distress[3].

STATISTICAL ANALYSIS

- Mean scores were compared to available sex matched population norms & compared between different sub-cohorts
- Categorical variables are presented as number and percentage and continuous variables are expressed as mean and standard deviation
- Student T test, ANOVA & Mann-Whitney tests were used to compare mean scores
- SPSS version 27 and Open Epi were used for statistical analyses

RESULTS

Table : 1 Characteristics of study cohort

Variable	Study cohort (n=37)
Age (years)	17.35(1.6)
Age < 18	22(59.4)
Ethnicity	
Non-Hispanic	28(75)
Hispanic	9(25)
Race	
Asian	1(2.7)
African American	8(21.6)
Caucasian	18 (48.6)
Native American	1(2.7)
Multiracial	9(24.3)
Education	
Middle school	12(32.4)
High school	15(40.5)
Some college	10(27)
Insurance	
Public	15(40.5)
Private	22(59.5)
Annual Income (USD)	
<40000	4(10.8)
40000-80000	20(54.1)
80000-120000	11(29.7)
>120000	2(5.4)
Karyotype	
45 XO	15 (40.5)
Mosaic	13 ((35)
Other	8 (22)
GH therapy	25 (67.6)
Estrogen therapy	27 (73)
Spontaneous puberty	16 (43.2)
BMI	
Normal/Underweight	17(45.9)
Overweight/Obese	20(54.1)
Final adult height (cm)	146.5(8.4)

Data are expressed as mean ± SD or numbers(%) Sum of percentages may be not equal to 100% because of missing data.

- Of the 59 eligible girls, 37 girls agreed to participate in our study.
- Turner girls had lower scores compared to sex matched population norms in AE (p =0.06), AO (p<0.05) and SCW(p<0.05) sub-scales; statistically significant in the latter two sub-scales.
- In contrast, they had higher scores in BASS(p=0.23) & OWP(p=0.21) sub-scales compared to population norms though not statistically significant[Figure1].
- Growth hormone or estrogen use, higher final adult height & spontaneous puberty did not have a statistically significant difference in sub-scale scores among girls with Turner Syndrome.

Table : 2 MBSRQ sub-scale scores of total cohort and sub-cohorts compared to reference population

	AE	AO	BASS	OWP	SCW
Reference	3.36(0.87)	3.91(0.6)	3.23(0.74)	3.03(0.96)	3.57(0.73)
Total cohort (N=37)	3.22(0.41)	3.32(0.42) **	3.38(0.74)	3.12(0.39)	3.26(0.71)*
Karyotype XO (N=15)	3.04(0.45)*	3.11(0.44)**	3.57(0.70)	2.92(0.36)	3.33(0.59)
Karyotype Mosaic (N=13)	3.44(0.32)	3.56(0.34)*	3.42(0.76)	3.38(0.35)*	3.17(0.72)
Karyotype Other (N=9)	3.17(0.36)	3.24(0.29)**	3.07(0.45)*	3.01(0.32)	3.29(0.76)
Normal BMI (N=17)	3.32(0.36)	3.43(0.36)**	3.53(0.82)	3.20(0.82)	2.9(0.73)**
Overweight/Obese (N=20)	3.13(0.45)*	3.23(0.45)*	3.25(0.66)	3.05(0.39)	3.55(0.56)

Table 2 shows comparison of MBSRQ subscale scores of our cohort and sub-cohorts(karyotype and BMI sub-cohorts) to the reference population. Scores in green indicate body image satisfaction/happiness, scores in red indicates body image distress. Lower scores on AE and BASS subscales and higher scores on AO, OWP, SCW subscales indicate body image distress. Higher scores on AE and BASS and lower scores on AO, OWP and SCW indicate happiness with one's physical appearance. *- p<0.05, **- p<0.001. MBSRQ subscale scores expressed as mean(Standard deviation); AE-Appearance evaluation; AO-Appearance orientation; BASS-Body Areas Self Satisfaction; OWP-Overweight Preoccupation; SCW-Self Classified Weight.

CONCLUSIONS

- Compared to sex-matched population norms, Turner girls are not reporting negative effects due to their appearance & report general satisfaction with most areas of their body.
- Turner girls with classic karyotype or who were obese/overweight were generally unhappy with their physical appearance(low AE scores).
- Although girls with Turner syndrome had low body image scores in AE(45XO karyotype and OW/Obese girls), they report satisfaction with most areas of their body (high BASS scores) & may cope with this by not focusing their attention on their appearance(low AO scores).
- Psychological support and counselling should be provided to girls with TS starting from early adolescence to deal with body image distress especially to girls with classic karyotype and those who are overweight/obese.

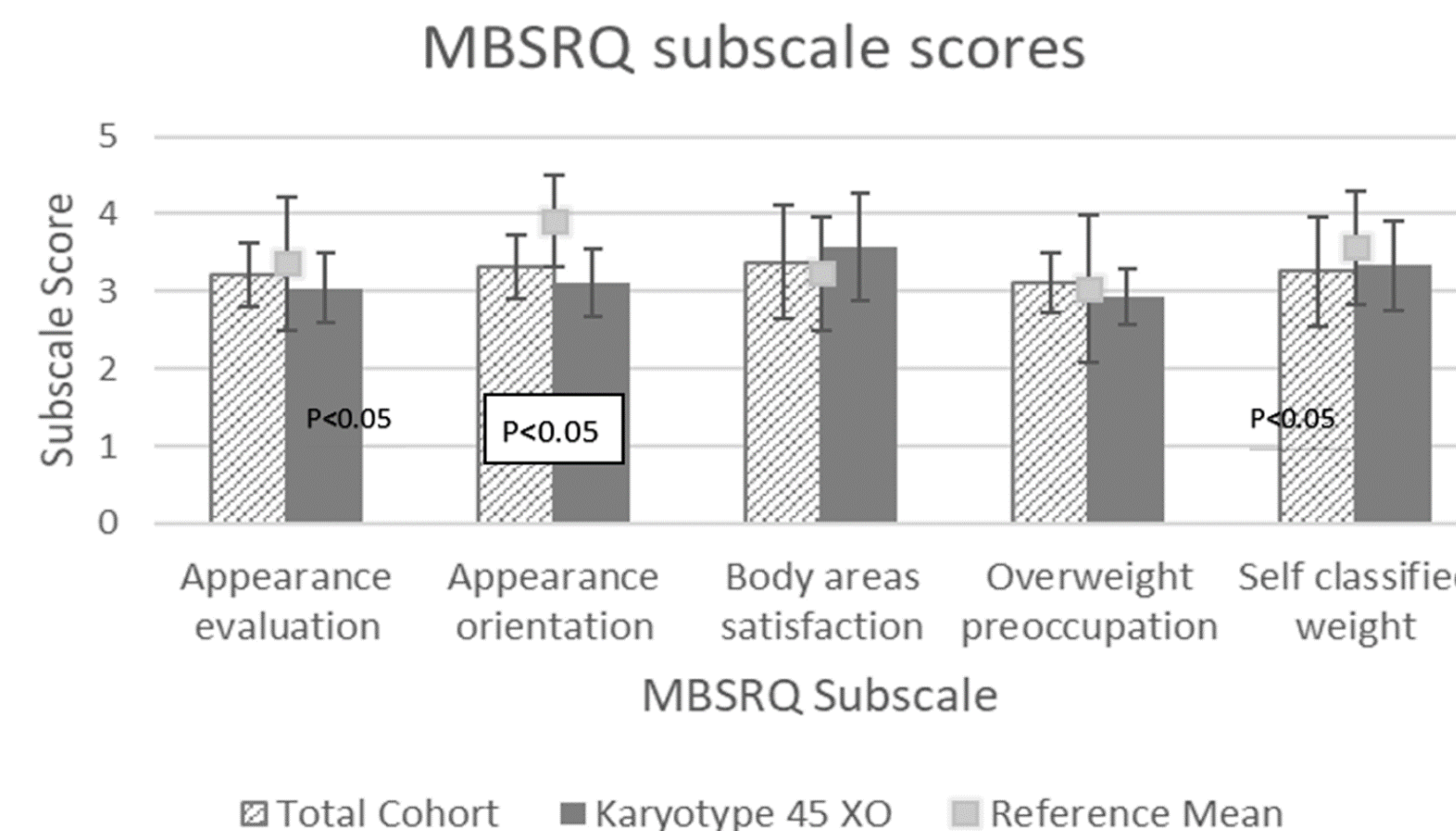
REFERENCES

- Taback SP1, Van Vliet G. Health-related quality of life of young adults with Turner syndrome following a long-term randomized controlled trial of recombinant human growth hormone. *BMC Pediatr.* 2011 May 29;11:49. doi: 10.1186/1471-2431-11-49.
- Backeljauw P1, Klein K2. Sex hormone replacement therapy for individuals with Turner syndrome. *Am J Med Genet C Semin Med Genet.* 2019 Mar;181(1):13-17. doi: 10.1002/ajmg.c.31685. Epub 2019 Feb 26.
- Cash T The Multidimensional Body-Self Relations Questionnaire users' manual, 2000. Available from the author at www.body-images.com 2016.

CONFLICTS OF INTERESTS & DISCLOSURES - NONE

The authors thank our participants and their parents for agreeing to participate in our study

Figure 1: MBSRQ sub-scale scores.



Legend: Figure 1 shows the MBSRQ sub-scale mean scores and their standard deviation of our total cohort(n=37) and 45XO Karyotype(n=15) compared to the sex matched population norms (reference mean)