Negative Impact of Unmet Needs on Pediatric Orthopaedic Patients

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INTRODUCTION:

Unmet social needs are associated with poor clinical outcomes across many orthopaedic pathologies. The relationship between unmet social needs and presentation in pediatric orthopaedics is less clear. This study aims to determine if unmet social needs are associated with emotional and physical health in pediatric orthopaedic patients.

METHODS:

Pediatric patients were recruited from a tertiary pediatric orthopaedic practice. Both new and returning patients were recruited for this study. Inclusion criteria were age greater than six and less than eighteen, as well as caregiver age less than 85. Patient reported outcomes of mobility, anxiety, and depression using PROMIS Pediatric Bank questionnaires were measured. Caretaker demographics were collected, including income, insurance coverage, education, and marital status. Lastly, caretaker social needs were assessed by asking about food, housing, and financial security. An unmet needs score (UNS) was calculated, generating a score from 3-12, with 3 being the lowest level of need. Data were assessed using descriptive statistics; continuous variables were assessed using Pearson Correlation; categorical variables were assessed using the Mann-Whitney U Test and Kruskal-Wallis Test, while the relationship between explanatory variables vs. UNS, as well as UNS vs. depression, mobility, and anxiety were assessed using linear regression models.

RESULTS:

140 patients were enrolled, and one was excluded due to incomplete questionnaires. Of the 139 patients included, 52.5% were male (Table 1). Males had greater function, lower anxiety, and lower depressive symptoms (50.45 v. 46.41, p=0.038; 44.34 v. 48.41, p=0.027; 42.70 v. 48.77, p=<0.01). The average UNS was 3.9. A greater UNS had a small statistically significant correlation with anxiety (Corr 0.1839, p=0.039). UNS did not correlate with mobility or depression (Table 2). The multivariable regression model showed income levels (p=0.02) and single parenthood (p=0.0001) (Table 3) as significant factors in predicting UNS. A unit increase in income category was associated with a decrease in UNS ($24-46k standardized regression coefficient [β] = -2.24 (p=0.02), $46-75k [β] = -3.15 (p=0.0015), $75-121k [β] = -4.07 (p<0.0001), <$121k [β] = -4.45 (p<.0001) (Table 3). UNS was a predictor of anxiety but not depression or mobility ([β] = .92 (CI: [0.04,1.80], (t=2.08), (p=0.04)) (Table 3).

DISCUSSION AND CONCLUSION:

Conclusion:

Significant variability in patient social factors exists. Of these factors, income levels and being a single parent are significant predictors of unmet needs scores. Having low income levels and being a single parent suggest greater barriers to orthopeadic care. Higher unmet needs scores are a significant predictor of increased anxiety but do not influence mobility or depression outcomes.

Table 1: Demographics

Age [Mean, (SD)]	19.1	(13.4)
Gender [N, %]		
Male	73	52.5%
Female	66	47.5%
Income		
<$24,000	4	2.9%
$24,000-$46,000	12	8.6%
$46,000-$75,000	8	5.8%
$75,000-$121,000	28	20.1%
>$121,000	87	62.6%
Insurance		
Medicaid	8	5.8%
Private	111	79.9%
Uninsured	3	2.2%
Other	17	12.2%
Marital Status		
Married or Partner	118	84.9%
Divorced or Separated	8	5.8%
Single	12	8.6%
Widowed	1	0.7%
Education		
High School or Less	16	11.6%
2-year College	19	13.8%
4-year College	49	35.5%
Master's Degree	32	23.2%
Post-College Graduate Degree	22	15.9%
Employment		
Unemployed	13	9.4%
Employed Part Time	15	10.8%
Employed Full Time	99	71.2%
Retired	3	2.2%
Other	9	6.5%

Table 3. Regression analysis

Multivariable Linear Regression:

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Residuals:
    Min      1Q  Median      3Q     Max
-3.1758 -0.9670 -0.3042  0.9437  6.0441

Coefficients:
                          Estimate  Std. Error.  t value  Pr(>|t|)
(Intercept)                5.6182     1.3440    4.180  5.73e-05 ***
gender                    -0.1020     0.2723   -0.375   0.70866
incomelower               -2.2352     0.9580   -2.333   0.02139 *
incomelow                 -3.1518     0.9698   -3.250   0.00152 **
incomemiddle              -4.0680     0.8467   -4.805  4.76e-06 ***
incomehigh                -4.4500     0.8374   -5.314  5.38e-07 ***
ins_medicaid               1.9162     1.1469    1.671   0.09753 .
ins_private                2.2485     0.9905    2.270   0.02508 *
ins_other_insurance        1.2624     1.0225    1.235   0.21950
mar_divorced_separated     0.2495     0.5846    0.427   0.67031
mar_single                 2.7066     0.5518    4.905  3.12e-06 ***
mar_widowed               -1.3379     1.5457   -0.866   0.38858
edu_2y_college             0.5618     0.5863    0.958   0.33999
edu_4y_college             0.4426     0.4924    0.899   0.37059
edu_masters                0.3295     0.5312    0.620   0.53631
edu_graduate               0.2755     0.5600    0.492   0.62375
emp_part_time              0.4880     0.6181    0.790   0.43144
emp_full_time              0.2096     0.5043    0.416   0.67849
emp_retired                0.8261     1.1743    0.704   0.48317
emp_other_work            -1.2666     0.6937   -1.826   0.07050 .

Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual standard error: 1.484 on 114 degrees of freedom
  (5 observations deleted due to missingness)
Multiple R-squared:  0.4955, Adjusted R-squared:  0.4115
F-statistic: 5.894 on 19 and 114 DF,  p-value: 4.775e-10
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Single Variable Linear Regression

UNS vs Mobility

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Estimate Std. Error  t value    Pr(>|t|)
(Intercept) 46.637782  2.2828553 20.4295830 5.864291e-42
unmet_score  0.454348  0.4813096  0.9439828 3.469708e-01
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UNS vs Anxiety

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  Estimate Std. Error  t value    Pr(>|t|)
(Intercept) 42.2130901  2.1068528 20.036089 1.074503e-40
unmet_score  0.9216649  0.4422954  2.083822 3.922982e-02
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UNS vs Depression

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Estimate Std. Error  t value    Pr(>|t|)
(Intercept) 42.6443365  2.1354259 19.969944 1.189527e-39
unmet_score  0.6456919  0.4429461  1.457721 1.475737e-01
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Table 2: Correlation Between Unmet Needs Score and PROMIS

		Mobility	Anxiety	Depression
Unmet Needs Score	Pearson Correlation	0.0835	0.1839	0.1330
	P-Value	0.347	**0.0392**	0.1476