

Table 1: Global Burden of Vitamin A Deficiency in Preschool Aged Children by WHO Region

Africa									
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
Algeria	D	AfrD	4,085.00	0.280	1.00		0.280	1,143.80	
Angola	D	AfrD	2,389.00	0.280	1.00		0.280	668.92	
Benin	D	AfrD	1,033.00	0.280	1.00	0.85	0.238	245.85	UNICEF 2001
Botswana	E	AfrE	241.00	0.325	1.00		0.325	78.33	WHO 1995 ; MI 1998 ; Anonymous. 1998
Burkina Faso	D	AfrD	2,185.00	0.705	0.60	0.85	0.360	785.62	WHO 1995 ; MI 1998 ; UNICEF 2001
Burundi	E	AfrE	1,154.00	0.280	1.00		0.280	323.12	UNICEF 2001
Cameroon	D	AfrD	2,472.00	0.197	0.60		0.118	292.19	WHO 1995 ; MI 1998 ; Gouado et al. 1998
Cape Verde	D	AfrD	60.00	0.022	1.00		0.022	1.32	WHO 1995 ; MI 1998 ; ACC/SCN 1997
Central African Republic	E	AfrE	563.00	0.682	1.00		0.682	383.97	Mulder-Sibanda et al. 2001
Chad	D	AfrD	1,338.00	0.280	1.00		0.280	374.64	Anonymous. 2001
Comoros	D	AfrD	106.00	0.280	1.00		0.280	29.68	
Congo	E	AfrE	525.00	0.440	0.40		0.176	92.40	WHO 1995 ; MI 1998 ; Anonymous. 2000A ; UNICEF 2001
Cote d'Ivoire	E	AfrE	2,304.00	0.466	0.60		0.280	644.20	WHO 1995 ; MI 1998
Democratic Republic of the Congo	E	AfrE	9,742.00	0.930	0.25		0.233	2,265.02	Donnen et al. 1996 ; WHO 1995 ; MI 1998 ; ACC/SCN 1997 ; UNICEF 2001
Equatorial Guinea	D	AfrD	75.00	0.280	1.00		0.280	21.00	
Eritrea	E	AfrE	635.00	0.211	1.00	0.85	0.179	113.89	Araya 1997 ; MI 1998 ; UNICEF 2001
Ethiopia	E	AfrE	11,032.00	0.680	0.90		0.612	6,751.58	Haidar and Demissie 1999 ; WHO 1995 ; MI 1998 ; Anonymous. 2001 ; UNICEF 2001
Gabon	D	AfrD	190.00	0.280	1.00		0.280	53.20	
Gambia	D	AfrD	205.00	0.640	1.00		0.640	131.20	WHO 2001 ; WHO 1995
Ghana	D	AfrD	3,189.00	0.720	0.40	0.85	0.245	780.67	Sommer and West KP 1996 ; WHO 1995 ; Anonymous. 2001 ; UNICEF 2001
Guinea	D	AfrD	1,234.00	0.280	1.00	0.85	0.238	293.69	UNICEF 2001
Guinea-Bissau	D	AfrD	199.00	0.280	1.00		0.280	55.72	
Kenya	E	AfrE	4,462.00	0.406	1.00		0.406	1,811.57	MI 1998 ; WHO 1995 ; WHO 2001 ; UNICEF 2001
Lesotho	E	AfrE	316.00	0.780	1.00		0.780	246.48	WHO 1995 ; WHO 2001 ; MI 1998
Liberia	D	AfrD	475.00	0.529	1.00		0.529	251.28	Craft 2001 ; Mulder-Sibanda et al. 2001 ; WHO 2001 ; MI 1998
Madagascar	D	AfrD	2,706.00	0.418	0.90	0.85	0.320	865.30	MOST 2001 ; WHO 2001 ; MI 1998 ; Anonymous. 2001 ; UNICEF 2001
Malawi	E	AfrE	1,990.00	0.220	0.75		0.165	328.35	Escoute et al. 1991 ; Anonymous. 2001 ; UNICEF 2001
Mali	D	AfrD	1,997.00	0.730	0.75	0.85	0.465	929.35	WHO 1995 ; MI 1998 ; Anonymous. 2001 ; UNICEF 2001
Mauritania	D	AfrD	439.00	0.416	0.60	0.85	0.212	93.14	WHO 1995 ; MI 1998 ; UNICEF 2001
Mauritius	D	AfrD	94.00	0.093	1.00		0.093	8.74	WHO 1995 ; MI 1998 ; UNICEF 2001
Mozambique	E	AfrE	3,414.00	0.280	1.00		0.280	955.92	
Namibia	E	AfrE	264.00	0.204	1.00	0.85	0.173	45.78	WHO 1995 ; MI 1998 ; UNICEF 2001
Niger	D	AfrD	2,034.00	0.280	1.00	0.85	0.238	484.09	Anonymous. 2001 ; UNICEF 2001
Nigeria	D	AfrD	17,880.00	0.281	1.00		0.281	5,024.28	WHO 2001 ; WHO 2001 ; MI 1998 ; UNICEF 2001
Rwanda	E	AfrE	1,259.00	0.064	1.00	0.85	0.054	68.49	WHO 2001 ; MI 1998 ; Anonymous. 2001 ; UNICEF 2001
Sao Tome and Principe	D	AfrD	27.00	0.280	1.00		0.280	7.56	
Senegal	D	AfrD	1,596.00	0.460	0.75		0.345	550.62	WHO 1995 ; Carlier et al. 1991 ; UNICEF 2001
Seychelles	D	AfrD	14.00	0.280	1.00		0.280	3.92	
Sierra Leone	D	AfrD	831.00	0.280	1.00		0.280	232.68	
South Africa	E	AfrE	4,909.00	0.333	1.00		0.333	1,634.70	South African Vitamin A Consultative Group 1996 ; MI 1998
Swaziland	E	AfrE	161.00	0.540	1.00		0.540	86.94	Anonymous. 1998 ; WHO 1995 ; WHO 2001 ; MI 1998

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(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
Togo	D	AfrD	800.00	0.280	1.00		0.280	224.00	
Uganda	E	AfrE	4,348.00	0.280	1.00		0.280	1,217.44	Anonymous. 2001
United Republic of Tanzania	E	AfrE	5,724.00	0.453	0.60	0.85	0.231	1,322.42	WHO 1995 ; Anonymous. 2001 ; UNICEF 2001
Zambia	E	AfrE	1,613.00	0.657	1.00	0.85	0.558	900.78	WHO 2001 ; UNICEF 2001
Zimbabwe	E	AfrE	1,625.00	0.358	1.00		0.358	581.75	WHO 2001

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WHO Region Eastern Mediterranean									
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
Afghanistan	D	EmrD	4,190.00	0.280	1.00		0.280	1,173.20	
Bahrain	B	EmrB	61.00						
Cyprus	B	EmrB	56.00						
Djibouti	D	EmrD	98.00	0.158	1.00		0.158	15.48	WHO 2001 ; MI 1998 ; UNICEF 2001
Egypt	D	EmrD	8,081.00	0.119	1.00		0.119	961.64	WHO 2001 ; MI 1998 ; Moussa et al. 1997 ; Anonymous. 2001
Iran, Islamic Republic of	B	EmrB	7,017.00	0.090	0.60		0.054	378.92	WHO 1995 ; UNICEF 2001
Iraq	D	EmrD	3,431.00	0.280	1.00		0.280	960.68	
Jordan	B	EmrB	1,024.00						
Kuwait	B	EmrB	200.00						
Lebanon	B	EmrB	368.00						
Libyan Arab Jamahiriya	B	EmrB	724.00						
Morocco	D	EmrD	3,215.00	0.400	0.75	0.85	0.255	819.83	ACC/SCN 1997 ; WHO 2001 ; MI 1998 ; WHO 1995 ; UNICEF 2001
Oman	B	EmrB	395.00	0.208	1.00	0.85	0.177	69.84	WHO 2001 ; MI 1998 ; UNICEF 2001
Pakistan	D	EmrD	23,793.00	0.320	0.75		0.240	5,710.32	WHO 1995 ; MI 1998 ; Paracha and Jameel 2000 ; Khan et al. 1988 ; UNICEF 2001
Qatar	B	EmrB	50.00						
Saudi Arabia	B	EmrB	3,220.00						
Somalia	D	EmrD	1,957.00	0.280	1.00	0.85	0.238	465.77	UNICEF 2001
Sudan	D	EmrD	4,162.00	0.280	1.00	0.85	0.238	990.56	UNICEF 2001
Syrian Arab Republic	B	EmrB	2,183.00						
Tunisia	B	EmrB	924.00						
United Arab Emirates	B	EmrB	212.00						
Yemen	D	EmrD	3,479.00	0.630	0.60	0.85	0.321	1,117.80	Rosen et al. 1996 ; UNICEF 2001

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South-East Asia									
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
<b>Bangladesh</b>	D	SearD	15,120.00	0.308	1.00		0.308	4,649.40	Hussain et al. 1995 ; HKI 1999 ; UNICEF and Progotir Pathy 1998 ; UNICEF 2001
<b>Bhutan</b>	D	SearD	339.00	0.280	1.00	0.85	0.238	80.68	WHO 1995
<b>Democratic People's Republic of Korea</b>	D	SearD	2,386.00	0.308	0.40		0.123	293.96	
<b>India</b>	D	SearD	114,976.00	0.308	1.00		0.308	35,355.12	WHO 1995 ; Rahmathullah 1991 ; Anonymous. 1999 ; Usha et al. 1991 ; Bhaskaram et al. 2000 ; Bhandari et al. 1994 ; Gopaldas et al. 1993 ; Hussain et al. 1995 ; HKI 2001 ; Anonymous. 2001 ; UNICEF 2001
<b>Indonesia</b>	B	SearB	22,006.00	0.575	1.00		0.575	12,653.45	Kjorhede et al. 1995 ; ACC/SCN 1997 ; MI 1998 ; Kjorhede et al. 1995 ; Anonymous. 2001 ; UNICEF 2001
<b>Maldives</b>	D	SearD	43.00	0.000	0.00		0.000	0.00	
<b>Myanmar</b>	D	SearD	4,226.00	0.236	0.80	0.85	0.160	678.19	UNICEF 2001
<b>Nepal</b>	D	SearD	3,485.00	0.349	1.00		0.349	1,216.27	Anonymous. 1999 ; UNICEF 2001
<b>Sri Lanka</b>	B	SearB	1,597.00	0.353	1.00		0.353	563.74	WHO 1995 ; WHO 2001 ; MI 1998
<b>Thailand</b>	B	SearB	4,831.00	0.266	0.25		0.067	321.26	Bloem et al. 1989 ; Fuchs et al. 1994 ; UNICEF 2001

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Western Pacific									
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
Australia	A	WprA	1,259.00						
Brunei Darussalam	A	WprA	35.00						
Cambodia	B	WprB	1,611.00	0.236	1.00		0.236	380.20	UNICEF 2001 ; HKI 2000
China	B	WprB	97,793.00	0.117	1.00		0.117	11,441.78	Yan 2001
Cook Islands	B	WprB	2.00	0.490	0.25		0.123	0.25	Schaumberg et al. 1995
Fiji	B	WprB	84.00						
Japan	A	WprA	6,171.00						
Kiribati	B	WprB	12.00	0.490	1.00		0.490	5.88	
Lao People's Democratic Republic	B	WprB	883.00	0.236	1.00		0.236	208.39	Malyavin 1996 ; UNICEF 2001
Malaysia	B	WprB	2,644.00	0.120	0.60		0.072	190.37	WHO 1995
Marshall Islands	B	WprB	9.00	0.630	1.00		0.630	5.67	Peterson 1996 ; UNICEF 2001
Micronesia, Federated States of	B	WprB	16.00	0.490	1.00		0.490	7.84	Lloyd-Puryear et al. 1991 ; Centers for Disease Control (CDC) 2001 ; Anonymous. 1996A ; UNICEF 2001
Mongolia	B	WprB	279.00						
Nauru	B	WprB	2.00						
New Zealand	A	WprA	289.00						
Niue	B	WprB	0.00						
Palau	B	WprB	3.00	0.490	0.40		0.196	0.59	
Papua New Guinea	B	WprB	668.00	0.910	0.25		0.228	151.97	
Philippines	B	WprB	9,800.00	0.380	1.00		0.380	3,724.00	Villavieja et al. 1999 ; Anonymous. 2001 ; UNICEF 2001
Republic of Korea	B	WprB	3,403.00						
Samoa	B	WprB	24.00						
Singapore	A	WprA	265.00						
Solomon Islands	B	WprB	70.00	0.490	0.25		0.123	8.58	Schaumberg et al. 1995
Tonga	B	WprB	12.00	0.490	0.25		0.123	1.47	
Tuvalu	B	WprB	1.00	0.490	0.25		0.123	0.12	
Vanuatu	B	WprB	28.00	0.490	0.25		0.123	3.43	
Viet Nam	B	WprB	8,454.00	0.118	1.00		0.118	997.57	Khan 2001

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Americas									
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References
Antigua and Barbuda	B	AmrB	7.00						
Argentina	B	AmrB	3,483.00						
Bahamas	B	AmrB	33.00						
Barbados	B	AmrB	17.00						
Belize	B	AmrB	34.00	0.100	1.00		0.100	3.40	WHO 1995 ; ACC/SCN 1997
Bolivia	D	AmrD	1,200.00	0.113	1.00		0.113	135.60	ACC/SCN 1997
Brazil	B	AmrB	15,993.00	0.547	0.25		0.137	2,187.04	WHO 1995 ; MI 1998
Canada	A	AmrA	1,810.00						
Chile	B	AmrB	1,448.00						
Colombia	B	AmrB	4,788.00	0.130	1.00	0.85	0.111	529.07	ACC/SCN 1997 ; PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Costa Rica	B	AmrB	437.00	0.087	1.00		0.087	38.02	ACC/SCN 1997 ; PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Cuba	A	AmrA	732.00						
Dominica	B	AmrB	7.00	0.090	1.00		0.090	0.63	ACC/SCN 1997 ; WHO 2001 ; MI 1998
Dominican Republic	B	AmrB	944.00	0.196	1.00		0.196	185.02	WHO 1995 ; MI 1998 ; ACC/SCN 1997 ; Jervis et al. 1994
Ecuador	D	AmrD	1,465.00	0.179	0.60		0.107	157.34	WHO 1995 ; MI 1998 ; Jervis et al. 1994
El Salvador	B	AmrB	792.00	0.360	0.60	0.85	0.184	145.41	WHO 1995 ; MI 1998 ; PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Grenada	B	AmrB	9.00						
Guatemala	D	AmrD	1,816.00	0.158	1.00	0.85	0.134	243.89	WHO 1995 ; MI 1998 ; ACC/SCN 1997 ; PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Guyana	B	AmrB	87.00						
Haiti	D	AmrD	1,136.00	0.196	1.00		0.196	222.66	PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Honduras	B	AmrB	966.00	0.130	1.00		0.130	125.58	Pineda 1998 ; WHO 1995 ; MI 1998 ; ACC/SCN 1997 ; UNICEF 2001 ; PAHO and PAHO-HPN-DHPP 2001
Jamaica	B	AmrB	272.00						
Mexico	B	AmrB	11,202.00	0.320	1.00		0.320	3,584.64	ACC/SCN 1997 ; MI 1998 ; Valencia 1996 ; UNICEF 2001 ; PAHO and PAHO-HPN-DHPP 2001
Nicaragua	D	AmrD	804.00	0.090	1.00		0.090	72.36	Anonymous. 1996B ; Friere 2001 ; UNICEF 2001 ; PAHO and PAHO-HPN-DHPP 2001
Panama	B	AmrB	302.00	0.060	1.00	0.85	0.051	15.40	WHO 1995 ; ACC/SCN 1997 ; MI 1998 ; UNICEF 2001 ; PAHO and PAHO-HPN-DHPP 2001
Paraguay	B	AmrB	765.00						
Peru	D	AmrD	2,898.00	0.130	1.00		0.130	376.74	WHO 1995 ; MI 1998 ; ACC/SCN 1997 ; Segura 1996 ; PAHO and PAHO-HPN-DHPP 2001 ; UNICEF 2001
Saint Kitts and Nevis	B	AmrB	4.00						
Saint Lucia	B	AmrB	15.00						
Saint Vincent and the Grenadines	B	AmrB	11.00						
Suriname	B	AmrB	40.00						
Trinidad and Tobago	B	AmrB	91.00						
United States of America	A	AmrA	19,344.00						
Uruguay	B	AmrB	283.00						
Venezuela, Bolivarian Republic of	B	AmrB	2,791.00	0.070	1.00		0.070	195.37	Anonymous. 1998 ; Rodriguez 1996 ; PAHO and PAHO-HPN-DHPP 2001

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WHO Region										Europe
(1) Country Name	(2) CRA Index	(3) WHO/CRA Index	(4) No. Under 5 Years (000's)	(5) Measured Prevalence	(6) National Weight	(7) VA Program Coverage Weight	(8) National Prevalence	(9) Number with VAD (000's)	(10) References	
Albania	B	EurB	305.00							
Andorra	A	EurA	4.00							
Armenia	B	EurB	232.00							
Austria	A	EurA	434.00							
Azerbaijan	B	EurB	639.00							
Belarus	C	EurC	505.00							
Belgium	A	EurA	549.00							
Bosnia and Herzegovina	B	EurB	198.00							
Bulgaria	B	EurB	368.00							
Croatia	A	EurA	235.00							
Czech Republic	A	EurA	476.00							
Denmark	A	EurA	324.00							
Estonia	C	EurC	62.00							
Finland	A	EurA	299.00							
France	A	EurA	3,572.00							
Georgia	B	EurB	344.00							
Germany	A	EurA	3,857.00							
Greece	A	EurA	496.00							
Hungary	C	EurC	514.00							
Iceland	A	EurA	22.00							
Ireland	A	EurA	256.00							
Israel	A	EurA	583.00							
Italy	A	EurA	2,620.00							
Kazakhstan	C	EurC	1,415.00							
Kyrgystan	B	EurB	554.00							
Latvia	C	EurC	105.00							
Lithuania	C	EurC	193.00							
Luxembourg	A	EurA	26.00							
Malta	A	EurA	25.00							
Monaco	A	EurA	2.00							
Netherlands	A	EurA	925.00							
Norway	A	EurA	293.00							
Poland	B	EurB	2,152.00							
Portugal	A	EurA	525.00							
Republic of Moldova	C	EurC	287.00							
Romania	B	EurB	1,024.00							
Russian Federation	C	EurC	7,006.00							
San Marino	A	EurA	1.00							
Slovakia	B	EurB	298.00							
Slovenia	A	EurA	93.00							
Spain	A	EurA	1,822.00							
Sweden	A	EurA	478.00							
Switzerland	A	EurA	414.00							
Tajikistan	B	EurB	863.00							
The former Yugoslav Republic of Macedonia	B	EurB	152.00	0.295	1.00		0.295	44.84	WHO 2001	

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Turkey	B	EurB	6,659.00						
Turkmenistan	B	EurB	570.00						
Ukraine	C	EurC	2,478.00						
United Kingdom	A	EurA	3,521.00						
Uzbekistan	B	EurB	3,061.00						
Yugoslavia	B	EurB	668.00						

Column Heading Footnotes:

- Country names as listed by WHO, based on the World Health Report 2001, List of Member States by WHO Region and Mortality Stratum, page 168. (WHO 2001)
- Comparative Risk Assessment Index of WHO, with letters assigned to countries based on risks of adult and child mortality: A=very low child, very low adult mortality; B=low child, low adult mortality; C=low child, high adult mortality; D=high child, high adult mortality; E=high child, very high adult (mainly due to HIV/AIDS) mortality. (WHO 2001A)
- A combined alpha code to facilitate joint classification by both WHO region and CRA index.
- National < 5 year old population (000's), based on the UNICEF 2001 State of the World's Children Report, Table 5: Demographic Indicators, column 3 (UNICEF 2001).
- Prevalence of vitamin A deficiency (based on % of children with serum retinol < 0.70 umol/L or abnormal impression cytology) as (1) reported by referenced surveys or studies, (2) imputed (as a median of 28% based on national prevalence estimates from 33 countries within the African and Eastern Mediterranean Regions), or (3) applied to a country based on a prevalence rate in a neighboring country of similar diet, culture, health and mortality risk.
- A subjective weight applied to the measured prevalence (col 6 x col 5) to obtain an estimated "national prevalence". A weight of 1.00 was assigned if a measured prevalence was reported or imputed as "national". Weights < 1.00 have been applied to nationally non-representative, or possibly outdated measured prevalence rates in order to estimate the national prevalence based on available data. Weights may differ from those used previously by analysts at WHO (WHO 1995) or the Micronutrient Initiative (MI1998) due to availability of new data or re-interpretation of previously existing findings.
- A vitamin A program coverage weight of 0.85 was applied to the product of (col 5 x col 6) prior to estimating the national prevalence of vitamin A deficiency if available data on status preceded the startup of a vitamin A supplementation program that achieved a reported coverage of >75% of the child population. Prevalence estimates were not adjusted if status data were collected during or after the start-up of vitamin A supplementation programs or for countries where reported program coverage was < 75%. A weight of 0.60 was applied for El Salvador, where status data preceded and enhanced sugar fortification program.
- Estimated national prevalence of vitamin A deficiency (col 5 x col 6 x col 7).
- Estimated number of vitamin A-deficient children < 5 years of age (000's) (col 4 x col 8).
- See the references in Section 8.

Table A blank cell indicates that no data, either empirical or imputable, are available for a country and/or the country is not considered to have a measurable population at-risk of vitamin A deficiency.



Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Africa	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	<b>Algeria</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	<b>Angola</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	<b>Benin</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Botswana</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) assigned a weight = 0.25 from 1979 data, and MI (MI 1998) assigned the same weight. This was changed to 1.00.</li> <li>2. ACCNutrView (1998) reported a 1992 national survey prevalence = 0.325, MI (MI 1998) copied the same figure.</li> <li>3. No data available.</li> </ol>
	<b>Burkina Faso</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI 1998 (MI 1998) assigned a weight = 0.60 from a sub national (?) survey of 3 northern provinces.</li> <li>2. MDIS95 (WHO 1995) and MI 1998 (MI 1998) reported sub national (?) survey of 3 northern provinces, which estimated the prevalence of VAD at 0.705.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Burundi</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Cameroon</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight = 0.40. It seems that the northern province survey should edge up the weight (if not the prevalence, also), so a weight = 0.60 was assigned.</li> <li>2. MDIS95 (WHO 1995) and MI (MI 1998) reported a prevalence = 0.197. A 1992 sub national survey (Gouado et al. 1998) found a 0.197 proportion of VAD in peri-urban and flooded areas, a small northern province survey conducted in 1988 found that 0.50 of 3 to 12 month olds have &lt; 10 ug/dl. The MDIS95 estimate was chosen.</li> <li>3. No data available.</li> </ol>
	<b>Cape Verde</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Based on reports included in MDIS95 (WHO 1995), MI (MI 1998), and ACCSCN (ACC/SCN 1997), a prevalence of 0.022 chosen.</li> <li>3. No data available.</li> </ol>
	<b>Central African Republic</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Sight and Life (Mulder-Sibanda et al. 2001) reported a prevalence = 0.682 in a 1999 national survey of 6 to 35 month olds. It is assumed that this rate applies for the &lt; 5-year-old age group.</li> <li>3. No data available.</li> </ol>
	<b>Chad</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1997 DHS (2001)</li> </ol>
	<b>Comoros</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>

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WHO Region	Africa	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Congo	<ol style="list-style-type: none"> <li>1. A weight of 0.40 was assigned due to endemicity of malaria. The MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight = 0.25 (for an unknown reason). Post-analysis an unpublished report dated March 2000 (200)</li> <li>2. A 1988 small survey/study among 6 to 59 month olds related to malaria exposure and VA status found a combined prevalence = 0.440 of children with serum retinol &lt; 20 ug/dl (a recalculation of old data). MDIS95 (WHO 1995) and MI (MI 1998) reported prevalence = 0.26 (for an unknown reason). The 0.440 estimate was chosen.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Cote d'Ivoire	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight = 0.60.</li> <li>2. MDIS95 (WHO 1995) indicates that a 1994 sub national survey of 4 northwestern departments reported a prevalence = 0.466 among "infants", after supplementation. In 1998, 0.25 of surveyed 1 to 3 year olds in 3 communes had serum retinol &lt; 10 ug/dl (assumed 50% had serum retinol &lt; 20 ug/dl). The former estimate was used, as was reported in MI (MI 1998).</li> <li>3. No data available.</li> </ol>
	Democratic Republic of the Congo	<ol style="list-style-type: none"> <li>1. A weight of 0.25 was assigned due to the reported high prevalence and the likelihood of a high rate of VAD among studied malnourished children.</li> <li>2. A 1993 report by Donnen (Donnen et al. 1996) found a prevalence = 0.93 in under-5 year olds in Eastern Kivu province with serum retinol &lt; 20 ug/dl. MDIS95 (WHO 1995), MI (MI 1998), and ACCSCN (ACC/SCN 1997) did not report any other data.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Equatorial Guinea	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	Eritrea	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1995 national survey (Araya 1997) of 0 to 2 year olds found a prevalence = 0.134 of surveyed children being at "moderate risk of developing VAD", which is assumed to represent the risk of having serum retinol levels &lt; 20 ug/dl. Although this probably is a low estimate for all children &lt; 5 years old, this value was applied for all preschool children. MDIS95 and MI (MI 1998) do not report any data.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Ethiopia	<ol style="list-style-type: none"> <li>1. Due to confusion in the reporting of the prevalence in the EAMJ (Haidar and Demissie 1999), the weight for this national survey has been set at 0.90, instead of 1.00. The MDIS95 (WHO 1995) and MI 1998 (MI 1)</li> <li>2. A 1999 national survey (Haidar and Demissie 1999) reported a prevalence = 0.68 for children with serum retinol &lt; 20 ug/dl. This prevalence is consistent with a 1980 - 81 report of 0.596, along with reported high rates of xerophthalmia. MDIS95 (WHO 1995) assigned a prevalence = 0.51, as did MI 1998 (MI 1998) for the year 1996. The 0.68 figure was chosen.</li> <li>3. 2000 DHS (2001), 1999 (UNICEF 2001)</li> </ol>
	Gabon	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	Gambia	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1999 national survey reported my MDIS2001 (WHO 2001) indicated a prevalence = 0.64 among surveyed children with serum retinol &lt; 20 ug/dl. Previously MDIS 95 (WHO 1995) reported a 1988 study of 2 to 6 year olds that found a study mean serum retinol level of 11.7 ug/dl in the low season and 22.3 ug/dl in the better-off season. If one assumes a standard deviation = 8.29 ug/dl (compatible with the literature), then using normal approximation, 39% of preschool children have serum retinol levels &lt; 20 ug/dl. Therefore, the prevalence of VAD has increased in Gambia between 1988 and 1999.</li> <li>3. No data available.</li> </ol>
	Ghana	<ol style="list-style-type: none"> <li>1. It is assumed that the VAD prevalence estimate is only relevant for the northern regions of the country, so a weight = 0.40 was chosen.</li> <li>2. The 1991 Ghana VAST survey indicated a pre-vitamin-A-supplementation-program prevalence = 0.72 (D. Ross unpublished data in Sommer and West 1996 (Sommer and West KP 1996)). This estimate is lower than the 0.549 (after applying a weight = 0.40) figure reported in the MDIS95 (WHO 1995), reflecting some improvement.</li> <li>3. 1998 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
	Guinea	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>

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WHO Region	Africa	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	<b>Guinea-Bissau</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	<b>Kenya</b>	<ol style="list-style-type: none"> <li>1. MI (MI 1998) reported a 1994 survey that indicated a weight = 0.33, borrowing the same weight from the MDIS95 (WHO 1995). The MDIS95 VAD prevalence estimate is based on a national survey, so a weight of 1.0</li> <li>2. A 1994 national survey reported by MDIS2001 (WHO 2001) indicated a prevalence = 0.406. MI (MI 1998) reported a 1994 survey that indicated a prevalence = 0.33. The 0.406 figure per WHO 2001 was chosen.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Lesotho</b>	<ol style="list-style-type: none"> <li>1. A 1993 national survey reported by MDIS95 (WHO 1995) and MDIS2001 (WHO 2001) assigned a weight = 0.75, but this report chose to use a value of 1.00 due to this being a national survey.</li> <li>2. A 1993 national survey reported by MDIS95 (WHO 1995) and MDIS2001 (WHO 2001) indicated a prevalence = 0.78. MI 1998 (MI 1998) did not report these data.</li> <li>3. No data available.</li> </ol>
	<b>Liberia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1999 DBS (Dried Blood Spot assessment method; (Craft 2001)) national survey (Mulder-Sibanda, Ortiz, Anede, and Baker 2001) of 6 to 35 month olds reported a prevalence = 0.529. It is assumed that this rate applies to all children &lt; 5 years old. Neither MDIS (WHO 2001) nor MI (MI 1998) reported these data.</li> <li>3. No data available.</li> </ol>
	<b>Madagascar</b>	<ol style="list-style-type: none"> <li>1. The MOST survey was a near-national survey, so a weight of 0.90 was assigned, instead of 1.00.</li> <li>2. A 2000 MOST-assisted, near-national survey of preschoolers (MOST 2001) reported a prevalence = 0.418. MDIS (WHO 2001) and MI (MI 1998) do not report these data.</li> <li>3. 1997 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Malawi</b>	<ol style="list-style-type: none"> <li>1. The weight = 0.75 was assigned, which is higher than normally applied for a survey only involving 2 districts. The resultant estimate is still considered conservative, because of the significant presence of xerophthalmia in the country.</li> <li>2. In 1991 Escoute (Escoute et al. 1991) reported that 22% of preschool children, 2 to 6 years of age, in 2 districts (though the authors referred to this as a "countrywide survey") were shown to have abnormal Impression Cytology with Transfer (ICT). It is assumed that the prevalence of abnormal ICT is equivalent to the prevalence of serum retinol &lt; 20 ug/dl.</li> <li>3. 2000 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Mali</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight = 0.75.</li> <li>2. Estimates reported in the MDIS95 (WHO 1995) assessment of previous surveys performed in 1986 and other years was used. The prevalence estimate is based on serum retinol data. MI (MI 1998) reported the same prevalence.</li> <li>3. 1996 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Mauritania</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight = 0.60.</li> <li>2. Two surveys conducted in 1987 among 1 to 15 year olds reported prevalences of 0.225 and 0.606 of children with serum retinol &lt; 20 ug/dl. MDIS95 (WHO 1995) and MI (MI 1998) averaged these two prevalences with equal weight to assign a prevalence = 0.416.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Mauritius</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) assigns a weight of 0.75, but MI98 (MI 1998) assigned a weight of 1.00. A weight of 1.00 was chosen.</li> <li>2. A 1995 national survey reported by MDIS95 (WHO 1995) and MI98 (MI 1998) indicated a prevalence = 0.093 for children 36 to 72 months of age.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Mozambique</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	<b>Namibia</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI98 (MI 1998) assigned a weight of 0.75, but a weight of 1.00 was applied due to this being a national sample.</li> <li>2. A 1992 national survey reported MDIS95 (WHO 1995) and MI98 (MI 1998) indicated a prevalence = 0.204.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Niger</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1998 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>

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WHO Region	Africa	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
		<b>Nigeria</b>	<ol style="list-style-type: none"> <li>1. MDIS2001 (WHO 2001) applied a weight of 0.75, but 1.00 was applied instead, due to this being a national probability survey.</li> <li>2. A 1993 OMNI-supported national survey reported at the Cairo IVACG meeting (WHO 2001) indicated a prevalence = 0.281. MI98 (MI 1998) did not report these data.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
		<b>Rwanda</b>	<ol style="list-style-type: none"> <li>1. MDIS2001 (WHO 2001) assigned a weight of 0.75, but the national survey weight of 1.00 was chosen.</li> <li>2. A 1996 national survey reported by MDIS2001 (WHO 2001) indicated a prevalence = 0.064. MI98 (MI 1998) did not report these data.</li> <li>3. 2000 DHS (&lt; 5 year olds) (2001),1999 (UNICEF 2001)</li> </ol>
		<b>Sao Tome and Principe</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
		<b>Senegal</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) assigned a weight of 0.60, but a weight of 0.75.</li> <li>2. A 1991 study (Carlier et al. 1991) reported a prevalence = 0.46, using ICT. MDIS95 (WHO 1995) reported a prevalence = 0.715, but the 0.46 figure was chosen instead.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
		<b>Seychelles</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
		<b>Sierra Leone</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
		<b>South Africa</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1994 national survey reported by NutrView (South African Vitamin A Consultative Group 1996) indicated a prevalence = 0.333. MI98 (MI 1998) reported a prevalence = 0.30, but the 0.333 figure was chosen instead.</li> <li>3. No data available.</li> </ol>
		<b>Swaziland</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The 1997 ACCSCN survey (1998) reported a prevalence = 0.54. No data were reported by MDIS95 (WHO 1995), MDIS2001 (WHO 2001), or MI 98 (MI 1998).</li> <li>3. No data available.</li> </ol>
		<b>Togo</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
		<b>Uganda</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 2001 DHS (&lt; 5 year olds) (2001)</li> </ol>
		<b>United Republic of Tanzania</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1982 to 1985 survey reported by MDIS95 (WHO 1995) was used to estimate the prevalence = 0.453.</li> <li>3. 1999 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
		<b>Zambia</b>	<ol style="list-style-type: none"> <li>1. MDIS 2001 (WHO 2001) assigned a weight of 0.75, but a weight of 1.00 was assigned instead, due to this being a national survey.</li> <li>2. A 1998 OMNI-supported national survey reported by MDIS 2001 (WHO 2001) indicated a prevalence = 0.657.</li> <li>3. 1999 (UNICEF 2001;UNICEF 2001)</li> </ol>

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WHO Region	Africa	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Zimbabwe	<ol style="list-style-type: none"> <li>1. MDIS 2001 (WHO 2001) assigned a weight of 0.75, but a weight of 1.00 was assigned instead, due to this being a national survey.</li> <li>2. A 1999 national survey reported by MDIS 2001 (WHO 2001) report indicated a prevalence = 0.358.</li> <li>3. No data available.</li> </ol>

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WHO Region	Eastern Mediterranean	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	<b>Afghanistan</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. No data available.</li> </ol>
	<b>Bahrain</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data are available, but estimate a low probability of VAD.</li> <li>3. No data available.</li> </ol>
	<b>Cyprus</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data are available, but estimate a low probability of VAD.</li> <li>3. No data available.</li> </ol>
	<b>Djibouti</b>	<ol style="list-style-type: none"> <li>1. The 1998 national survey assigned a weight of 0.40, and the MDIS 2001 (WHO 2001) assigned a weight of 0.75. A weight of 1.00 was assigned instead, because this estimate is base on a national survey.</li> <li>2. A 1988 national survey reported by MDIS 2001 (WHO 2001) indicated that 0.16 of &lt; 5 year olds had serum retinol &lt; 20 ug/dl. This was determined by averaging a rate of 0.123 in rural populations and a rate of "over 20%" in urban populations. The actual figure reported in the MDIS 2001 (WHO 2001) was a prevalence = 0.158. This was the estimate chosen. MI 98 (MI 1998) did not report any data for this country.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Egypt</b>	<ol style="list-style-type: none"> <li>1. The MDIS 2001 (WHO 2001) report assigned a weight of 0.75, but the MI 98 (MI 1998) assigned a weight of 1.00. The 1.00 figure was applied, because this is a national survey.</li> <li>2. A 1995 national survey reported by MDIS 2001 (WHO 2001) and at the Cairo IVACG meeting (Moussa et al. 1997) indicated a prevalence = 0.119 among 6 to 76 month olds. MI 98 (MI 1998) reported a prevalence = 0.113, based on the same survey. The MDIS 2001 figure was chosen.</li> <li>3. 2000 DHS (&lt; 5 year olds)+K-8 (2001)</li> </ol>
	<b>Iran, Islamic Republic of</b>	<ol style="list-style-type: none"> <li>1. The MDIS95 (WHO 1995) report did not assign a weight. Perhaps WHO considered the data insufficient for making an estimate of the extent of VAD in the country. Therefore a weight of 0.60 was applied.</li> <li>2. Studies in the 1980's by Kimiagar (WHO 1995) reported an approximate prevalence of 0.09.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Iraq</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No biochemical data exist for Iraq, though older data on xerophthalmia do exist. No data are available for this country. Therefore the prevalence was estimated by choosing the median value from among a set of values representing 33 African Region and Eastern Mediterranean Region countries with known prevalences of VAD. The median was 0.28.</li> <li>3. No data available.</li> </ol>
	<b>Jordan</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data are available, but estimating a low probability of VAD.</li> <li>3. No data available.</li> </ol>
	<b>Kuwait</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Lebanon</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Libyan Arab Jamahiriya</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Morocco</b>	<ol style="list-style-type: none"> <li>1. A weight = 0.75 was assigned for the rate reflecting 3 regions.</li> <li>2. A 1997 ACCSCN national survey (ACC/SCN 1997) reported a prevalence = 0.40. These data are not reported in either the MDIS (WHO 2001) or MI reports (MI 1998;WHO 1995).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Oman</b>	<ol style="list-style-type: none"> <li>1. MDIS2001 (WHO 2001) applied a weight of 0.75, but 1.00 was applied instead, due to this being a national probability survey.</li> <li>2. A 1994 to 1995 national survey reported by MDIS 2001 (WHO 2001) indicated a prevalence = 0.208 of serum retinol levels &lt; 20 ug/dl. MI 98 (MI 1998) did not report these data.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Eastern Mediterranean	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	<b>Pakistan</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight of 0.40 for this country. Instead a weight of 0.75 was assigned, in order to allow for this being a near-national survey and to allow for some uncertainty</li> <li>2. A 1997 survey reported by Paracha et al. (Paracha and Jameel 2000) indicated a prevalence = 0.32 of serum retinol &lt; 20 ug/dl among 3074 children 6 to 60 month-old in urban and rural Peshwar. Khan and Abbas (Khan et al. 1988) reported a prevalence = 0.61 among 143 preschool children in Islamabad. Older data from national and small surveys conducted in the 1970's and 1980's (WHO 1995) indicated a range of prevalences from 0.20 to 0.79 MI (MI 1998) reported these data with a midpoint prevalence of 0.50 for preschool children with serum retinol &lt; 20 ug/dl. The 1997-reported figure of 0.32 was chosen.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Qatar</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Saudi Arabia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Somalia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Sudan</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Due to lack of population-based serological or impression cytological data on vitamin A status for this country, the median prevalence proportion from a distribution of 33 national estimates obtained for countries, in the absence of vitamin A programs, within the African and Eastern Mediterranean Regions was applied to this country's population of &lt; 5 year old children. The median proportion was 0.28 (28%).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	<b>Syrian Arab Republic</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data are available, but estimating a low probability of VAD.</li> <li>3. No data available.</li> </ol>
	<b>Tunisia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>United Arab Emirates</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Yemen</b>	<ol style="list-style-type: none"> <li>1. Western Yemen includes 0.25 of the total population of the country. It is also the poorest area of the nation, but it is not likely to be the only area of the nation with VAD. Therefore, a weight of 0.60 was assigned.</li> <li>2. A 1992 population survey of Western Yemen (Rosen et al. 1996) reported a prevalence = 0.63 for preschool children with serum retinol &lt; 20 ug/dl.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	South-East Asia	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
		<b>Bangladesh</b>	<ol style="list-style-type: none"> <li>1. Assumed that the prevalence estimate applies to the entire country. See the comment for the VAD prevalence.</li> <li>2. In a cross-sectional, population-based survey in northwest Bangladesh, Hussain observed 0.57 of preschool children without evidence of xerophthalmia to have serum retinol levels &lt; 20 ug/dl (Hussain et al. 1995). Elsewhere throughout Bangladesh, Helen Keller International (HKI) observed 0.22 of children to be hyporetinolemic (serum retinol levels &lt; 20 ug/dl) based on 1997 to 1998 estimates obtained through the Nutritional Surveillance Program (Helen Keller International 1999). The latter may be taken by many to represent national data, and it is probably close, but it also represents NGO service areas that were surveyed. These populations are likely to be receiving better coverage and have better vitamin A status than elsewhere, as evident by maternal XN rate during pregnancy of 0.27 in the HKI report, but 0.128 nationally from the UNICEF MICS survey (UNICEF and Progotir Pathey 1998). So, it seems more appropriate to counter the HKI estimate slightly with other small population-based estimates, such as data from Hussain (Hussain, Kvale, and Odland 1995). So, if we assume other higher estimates represent 1/4th of the population, then <math>(0.57 \times 0.25) + (0.22 \times 0.75) = 0.3075</math> with serum retinol levels &lt; 20 ug/dl among preschool children amidst vitamin A distribution programs.</li> <li>3. 1999 (&lt; 5 year olds) (HKI 1999), 1999 (UNICEF 2001)</li> </ol>
		<b>Bhutan</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1985 national survey reported by MDIS95 (WHO 1995) (p 91) indicated a prevalence = 0.14 of serum retinol levels &lt; 10 ug/dl among 134 preschool children 0 to 4 year olds. Using the "doubling rule" gives prevalence of serum retinol levels &lt; 20 ug/dl = 0.28.</li> <li>3. No data available.</li> </ol>
		<b>Democratic People's Republic of Korea</b>	<ol style="list-style-type: none"> <li>1. A weight of 0.40 was used, to account for famine areas within this country, but no data exist concerning this famine's effect on VAD prevalence.</li> <li>2. No data are available, so the prevalence rate was used from the 1998 national survey of Bangladesh.</li> <li>3. No data available.</li> </ol>
		<b>India</b>	<ol style="list-style-type: none"> <li>1. A weight of 1.00 has been assigned versus the previous figure of 0.80, since the Bangladeshi prevalence of 0.3075 already reflects a heavy, national program for VA supplementation. (WHO 1995)</li> <li>2. There is a dearth of biochemical data on VAD in the Indian context. However, the size of the country, its known endemicity of xerophthalmia in children and women, adequate data showing chronically poor VA intakes (thus its importance in estimating a global and regional burden), and the impact of VA supplementation on child survival, requires that a tentative prevalence be imputed. Many small surveys have been reported, such as the following: a prevalence of serum retinol of 0.375 was observed in Tamil Nadu in 1989 (Rahmathullah 1991); in the Terai of Nepal, bordering the Gangetic flood plains, a prevalence of 0.40 was observed in preschool aged children (1999); in Indian preschoolers with diarrhea, deficient serum retinol concentrations have been reported (Usha et al. 1991); in a study of 112 healthy 12 month old infants in Hyderabad, Bhaskaram observed approximately a proportion of 0.52 to have low serum retinol (Bhaskaram et al. 2000); Bhandari et al. observed low serum retinol in 0.25 of preschool children with an acute episode of diarrhea in the previous month in a Delhi slum (Bhandari et al. 1994); Gopaldas et al. observed mean serum retinol levels of 16 ug/dl in school boys 9 to 15 years of age living in slums of Baroda (Gopaldas et al. 1993); in a cross-sectional population-based survey in neighboring Northwestern Bangladesh, Hussain observed 0.57 of preschool children without evidence of xerophthalmia to have low serum retinol (Hussain, Kvale, and Odland 1995); and elsewhere throughout Bangladesh, HKI observed 0.22 of children to be hyporetinolemic (HKI 2001). A reasonable estimate of the likely extent of VAD in India, based on available, non-representative data of population distributions, coupled with extensive knowledge of xerophthalmia throughout the country, would be roughly the same as estimated for Bangladesh, or a 0.3075 prevalence of serum retinol levels &lt; 20 ug/dl in preschool children. Therefore the estimate of 0.3075 from the 1998 national survey of Bangladesh was chosen.</li> <li>3. 1999 DHS (2001) (&lt; 5 year olds), 1999 (UNICEF 2001)</li> </ol>
		<b>Indonesia</b>	<ol style="list-style-type: none"> <li>1. No weight was used since the prevalences obtained in 1991 national survey and by Kholhede (Kjolhede et al. 1995) in 1995 in Central Java were all obtained in the presence of national VAC distribution programs.</li> <li>2. A 1991 national survey reported by ACCSCN (ACC/SCN 1997), which was used by the MI/Tulane report (Table A.3) (MI 1998), indicated a prevalence of 0.575 among preschool children. Kholhede et al. (Kjolhede, Stallings, Dibley, Sadjimin, Dawiesah, and Padmawati 1995) reported a prevalence of 0.584 among 6 to 48 month olds in Central Java (n = 666). The latter study supports the former estimate of 0.575 even amidst xerophthalmia control using VAC distribution programs that existed long before these surveys. The figure of 0.575 was chosen.</li> <li>3. 1997 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
		<b>Maldives</b>	<ol style="list-style-type: none"> <li>1. No data have been reported, so a weight of 0.00 was assigned.</li> <li>2. No data are available, but it is assumed that the risk of VAD is minimal</li> <li>3. No data available.</li> </ol>
		<b>Myanmar</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Myanmar shares the Indochina culture with other surrounding countries. The best data for this cultural category are from Viet Nam, with a VAD prevalence of 0.117. Therefore, 0.117 was doubled to obtain the final estimate of 0.236, since xerophthalmia rates are higher in Myanmar than in Viet Nam.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
		<b>Nepal</b>	<ol style="list-style-type: none"> <li>1. Nepal's reported prevalence rate is assumed to reflect the status amidst a VAC program. Therefore, the prevalence is not adjusted.</li> <li>2. A 1998 National Micronutrient Survey reported a prevalence of 0.349. (1999)</li> <li>3. 1998 NMS (&lt; 5 year olds) (1999), 1999 (UNICEF 2001)</li> </ol>



Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	South-East Asia	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	<b>Sri Lanka</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) applied a weight of 0.75, but 1.00 was applied instead, due to this being a national probability survey.</li> <li>2. A 1996 national survey reported by MDIS 2001 (WHO 2001) indicated a prevalence = 0.353 of preschool children with serum retinol &lt; 20 ug/dl. MI98 (MI 1998) did not report these data.</li> <li>3. No data available.</li> </ol>
	<b>Thailand</b>	<ol style="list-style-type: none"> <li>1. If you assume areas at high risk for VAD make up 1/4th of the country, then a weight of 0.25 is assigned.</li> <li>2. Bloem et al (Bloem et al. 1989) report that in 997 children sampled from communities in northeastern Thailand during the dry season the measured mean serum retinol level (SD) = 21.1 (8.29) ug/dl. Using a normal approximation this yields a prevalence = 0.448 of children with serum retinol levels &lt; 20 ug/dl. The same method would have predicted a prevalence = 0.09 among children with serum retinol levels &lt; 10 ug/dl, which is close to actual reported &lt; 10 ug/dl prevalence of 0.127, reported by Bloem. Five years later, Fuchs et al (Fuchs et al. 1994) report abnormal CIC in 0.62 of 145 children 0 to 6 years old in 3 villages of northern Thailand. This is comparable in magnitude to the results obtained by Bloem using serum retinol levels. An average of these two values, equally weighted, suggests 0.534 of preschool children in high-risk areas of northern Thailand have low serum retinol, at least seasonally. VAD waxes and wanes by season in Thailand, with highest prevalence observed between February and March, and lowest / non-existent prevalence between August and September. Therefore, it seems reasonable to reduce dry season prevalences by a factor of 0.50 to obtain a year round estimate. Dividing 0.534 by 2, a prevalence estimate of 0.266 was obtained for the high-risk areas (i.e. northern, northeast and southern Thailand).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Western Pacific	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	Australia	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	Brunei Darussalam	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	Cambodia	<ol style="list-style-type: none"> <li>1. The UNICEF SOWC report for 2001 (UNICEF 2001) shows a 79% VAC coverage rate; but a HKI (HKI 2000) report gives detailed data showing 10% to 55% coverage. The HKI estimate was chosen, so no adjustment was</li> <li>2. Cambodia shares the Indochina culture with other surrounding countries. The best data for this cultural category are from Viet Nam, with a VAD prevalence of 0.117. Therefore, 0.117 doubled to obtain the final estimate of 0.236, because xerophthalmia rates are higher in Cambodia than in Viet Nam.</li> <li>3. 1999 (UNICEF 2001), 2000 HKI</li> </ol>
	China	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A national survey reported by Yan (Yan 2001) indicated a prevalence = 0.117 of serum retinol levels &lt; 20 ug/dl among preschool children. Based on consideration of sub national / county reports, this could be an underestimate, with Baoding city reporting prevalences of 0.201 and 0.164 from two separate surveys. The prevalence estimate of 0.117 was chosen.</li> <li>3. No data available.</li> </ol>
	Cook Islands	<ol style="list-style-type: none"> <li>1. A weight of 0.25 was assigned, because the reported rates of xerophthalmia are much lower than in the Federated States of Micronesia (Schaumberg et al. 1995a).</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	Fiji	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	Japan	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	Kiribati	<ol style="list-style-type: none"> <li>1. Due to the high rates of clinical xerophthalmia, no adjustment is applied to the prevalence.</li> <li>2. No serum retinol level or CIC data are available for this country, but there are high clinical rates just like Chuuk, Federated States of Micronesia. Therefore, the prevalence for the Federated States of Micronesia, 0.49, was applied for this country.</li> <li>3. No data available.</li> </ol>
	Lao People's Democratic Republic	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. Laos shares the Indochina culture with other surrounding countries. The best data for this cultural category are from Viet Nam, with a VAD prevalence of 0.117. Therefore, 0.117 was doubled to obtain the final estimate of 0.236, because xerophthalmia rates are higher in Laos than in Viet Nam. A national survey reported at the Guatemala City IVACG meeting (Malyavin 1996) indicated a night blindness prevalence of 0.007 among preschool children.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Malaysia	<ol style="list-style-type: none"> <li>1. A weight = 0.25 (WHO 1995) with already low prevalence seems severe given rural areas of Sarawak are included, so a weight of 0.60 was applied here.</li> <li>2. This 0.12 prevalence rate is based on old surveys reviewed by MDIS95 (WHO 1995).</li> <li>3. No data available.</li> </ol>
	Marshall Islands	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A prevalence of 0.63 among preschool children with serum retinol levels &lt; 20 ug/dl was reported at the Guatemala City IVACG meeting (Peterson 1996).</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Micronesia, Federated States of	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The results from a John's Hopkins University study on Chuuk (Lloyd-Puryear et al. 1991) and a CDC study in Yap (Centers for Disease Control (CDC) 2001) were combined to estimate a composite prevalence of 0.49 among preschool children with serum retinol levels &lt; 20 ug/dl. Some serum data suggest higher prevalence rates (1996a), but the composite estimate was chosen.</li> <li>3. 1999 (UNICEF 2001)</li> </ol>
	Mongolia	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	Nauru	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Western Pacific	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	<b>New Zealand</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Niue</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Palau</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	<b>Papua New Guinea</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Philippines</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. This prevalence estimate of 0.38 was reported by a 1998 national survey. (Villavieja et al. 1999)</li> <li>3. 1998 DHS (&lt; 5 year olds) (2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Republic of Korea</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Samoa</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Singapore</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Solomon Islands</b>	<ol style="list-style-type: none"> <li>1. A weight of 0.25 was assigned, because the reported rates of xerophthalmia are much lower than in the Federated States of Micronesia (Schaumberg et al. 1995b).</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	<b>Tonga</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	<b>Tuvalu</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	<b>Vanuatu</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. The prevalence of VAD from the Federated States of Micronesia was applied here.</li> <li>3. No data available.</li> </ol>
	<b>Viet Nam</b>	<ol style="list-style-type: none"> <li>1. No adjustments are going to be made to the Khan report (Khan 2001).</li> <li>2. A 1998 survey conducted in the presence of vitamin A delivery programs as reported by Khan (Khan 2001) indicated a prevalence of 0.118.</li> <li>3. No data available.</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Americas	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	<b>Antigua and Barbuda</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Argentina</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Bahamas</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Barbados</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Belize</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) assigned a weight of 0.40, but there is no indication why this weight was assigned since this is a national survey. Therefore, a weight of 1.00 was assigned.</li> <li>2. A 1990 national survey reported by MDIS95 (WHO 1995) and ACCSCN97 (ACC/SCN 1997) indicated a prevalence = 0.10.</li> <li>3. No data available.</li> </ol>
	<b>Bolivia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1991 national survey reported by the ACCSCN97 (ACC/SCN 1997) indicates a prevalence = 0.113.</li> <li>3. No data available.</li> </ol>
	<b>Brazil</b>	<ol style="list-style-type: none"> <li>1. The MDIS95 (WHO 1995) reported weight of 0.25 was chosen.</li> <li>2. The MDIS95 (p 33) (WHO 1995) reports a 1989 Bahia survey in 0 to 6 year olds showing a prevalence = 0.547 of children with serum retinol levels &lt; 20 ug/dl. MI (MI 1998) used these same figures in their report. A subsequent report from Bahia concerning a 1996 survey of 556 children shows a prevalence = 0.437 of children with serum retinol levels &lt; 20 ug/dl, suggesting little has changed. BUT this looks like the SAME data being reported from 1989, with the same sample size. Therefore, the MDIS95-reported 0.547 prevalence was chosen.</li> <li>3. No data available.</li> </ol>
	<b>Canada</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Chile</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Colombia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1995 national survey reported by ACCSCN97 (ACC/SCN 1997) indicated a prevalence = 0.13.</li> <li>3. 1999 PAHO ( 6 to 59 month olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Costa Rica</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1996 national survey reported by ACCSCN97 (ACC/SCN 1997) indicated a prevalence = 0.087.</li> <li>3. 1999 PAHO (12 to 59 month olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Cuba</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Dominica</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1996 national survey of preschool children reported by ACCSCN97 (ACC/SCN 1997) indicated a prevalence = 0.09. These data were not reported in MDIS (WHO 2001) or MI (MI 1998).</li> <li>3. No data available.</li> </ol>
	<b>Dominican Republic</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI (MI 1998) assigned a weight of 0.40. A weight of 1.00 was assigned, since both of these estimates, which are 2 years apart, are consistent.</li> <li>2. A 1991 survey of preschool children in the southwestern region of the country, bordering Haiti, found a prevalence = 0.196, which is supported by smaller hospital reports of xerophthalmia. This prevalence was reported by MDIS95 (WHO 1995), ACCSCN97 (ACC/SCN 1997), and MI98 (MI 1998). Interestingly, J. Mora reported a Dominican Republic survey of preschool children in 1993 with a prevalence = 0.236 (Jervis et al. 1994) (Figure 7). No methods or other reports are provided. Although this appears to be more recent data, the earlier estimate of 0.196 was chosen.</li> <li>3. No data available.</li> </ol>

Table 1: Comments: Global Burden of Vitamin A Deficiency in Preschool Aged Children Table By WHO Region

WHO Region	Americas	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
		<b>Ecuador</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and the MI/Tulane reports (MI 1998) assigned a weight of 0.40. For the purpose of the current estimate, a weight of 0.60, because VAD is likely to be a problem elsewhere in the country.</li> <li>2. A 1986 third national nutrition survey showed a prevalence of 0.139 of serum retinol levels &lt; 20 ug/dl among a preschool population (Jervis, Rodrugues, and Nelson 1994). A 1993 survey of 1562 children, 12 to 59 months of age in the country's 5 poorest provinces, found &lt; 20 ug/dl prevalence of 0.179. The MDIS95 (p 34) (WHO 1995) reported both surveys as well, but reported prevalences of 0.141 and 0.219 for serum retinol levels &lt; 20 ug/dl in 1986 and 1993, respectively. For the latter survey, though, the MDIS95 (WHO 1995) actually used a prevalence of 0.163. MI/Tulane (MI 1998) reported the same 1993 survey, using the same 0.163 prevalence estimate. Confusing. The original MOH report in Spanish (reference #2026 in the MDIS95 report (WHO 1995)) was not available, therefore the 0.179 figure was chosen (as reported by Jervis and Nelson (Jervis, Rodrugues, and Nelson 1994)).</li> <li>3. No data available.</li> </ol>
		<b>El Salvador</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) assigned a weight of 0.40, but this was not well justified in that report. In light of the fact that El Salvador has been fortifying sugar with VA throughout the last 2 decades, the normal national survey weight of</li> <li>2. A 1988 national survey reported by MDIS95 (WHO 1995) and MI98 (MI 1998) indicated a prevalence = 0.36 of serum retinol levels &lt; 20 ug/dl among preschool children.</li> <li>3. 1999 PAHO (12 to 24 month olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
		<b>Grenada</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
		<b>Guatemala</b>	<ol style="list-style-type: none"> <li>1. A weight of 1.00 was chosen, reflecting that this is an estimate from a national survey and also reflecting the existing impact of sugar fortification on VAD status. This is different from the weight of 0.60 used for breastfeeding moms because of the dif</li> <li>2. A 1988 survey reported by MDIS95 (WHO 1995) and MI98 (MI 1998) indicated a prevalence = 0.26 of preschool children with serum retinol levels &lt; 20 ug/dl. In contrast, a 1995 national survey reported by ACCSCN97 (ACC/SCN 1997) and MI98 (MI 1998) (Table 4) indicated a prevalence of 0.158. The latter estimate was chosen.</li> <li>3. 1999 PAHO (12 to 36 months olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
		<b>Guyana</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
		<b>Haiti</b>	<ol style="list-style-type: none"> <li>1. Given that both Dominican Republic and Haiti share the same island mass, similar cultures, and the likely worse off condition of children in Haiti, a weight of 1.00 was assigned.</li> <li>2. No biochemical data have been reported for Haiti. The Dominican Republic prevalence of 0.196 was applied here. Given that both countries share the same island mass, similar cultures, and the likely worse off condition of children in Haiti, this appears to be a valid estimate.</li> <li>3. 1999 PAHO (12 to 59 month olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
		<b>Honduras</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1996 national survey reported a prevalence = 0.13 of preschool children with serum retinol levels &lt; 20 ug/dl (Pineda 1998). These data are not reported in the MDIS (WHO 1995), MI (MI 1998), or ACCSCN reports (ACC/SCN 1997). This estimate is lower than 0.18 and 0.40 figures from 1987 and 1966, respectively. That was long before the institution of sugar fortification.</li> <li>3. 1999 (UNICEF 2001), Not reported to PAHO (PAHO and PAHO-HPN-DHPP 2001)</li> </ol>
		<b>Jamaica</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
		<b>Mexico</b>	<ol style="list-style-type: none"> <li>1. A weight of 1.00 was assigned, since no national VA programs have been active since 1990.</li> <li>2. A 1990 national survey reported by ACCSCN97 (ACC/SCN 1997) and MI98 (MI 1998) indicates a prevalence = 0.32 of preschool children with serum retinol levels &lt; 20 ug/dl. At the Guatemala City IVACG meeting (Valencia 1996), Valencia reported a prevalence of 0.463 of school-aged children (6-10 years old) with serum retinol levels &lt; 20 ug/dl, so no evidence of improved status in country. The 0.32 estimate was chosen.</li> <li>3. 1999 (UNICEF 2001), Not reported to PAHO (PAHO and PAHO-HPN-DHPP 2001)</li> </ol>
		<b>Nicaragua</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A national survey prevalence estimate of 0.29 for preschoolers with VAD (serum retinol &lt; 20 ug/dl) was reported at the IVACG meeting in Guatemala City in 1996 (1996b). BUT Wilma Friere (Friere 2001) reported a new national survey that had just been completed, where the prevalence estimate for VAD among preschool children was 0.09. This is down from the estimate of 0.29 to 0.31 from 1996. Sugar fortification with VA has been underway, along with VAC distribution in Nicaragua. The more recent estimate of 0.09 was chosen. Further verification of this figure with Dr. Friere will be conducted.</li> <li>3. 1999 (UNICEF 2001), Not reported to PAHO (PAHO and PAHO-HPN-DHPP 2001)</li> </ol>

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WHO Region	Americas	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Country Name	
	<b>Panama</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1992 national survey reported by MDIS95 (WHO 1995) and ACCSCN97 (ACC/SCN 1997) indicated a prevalence = 0.06 among preschool children. MDIS95 did not include this figure in their overall estimation of the world VAD burden, because they did not believe that this prevalence was of public health significance. MI98 (MI 1998) did not report these data. It was decided that this prevalence is of public health significance.</li> <li>3. 1999 (UNICEF 2001), Not reported to PAHO (PAHO and PAHO-HPN-DHPP 2001)</li> </ol>
	<b>Paraguay</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Peru</b>	<ol style="list-style-type: none"> <li>1. MDIS95 (WHO 1995) and MI98 (MI 1998) assigned a weight of 0.40 to these national survey data, but a weight of 1.00 was applied to reflect that this is a national survey.</li> <li>2. The ACCSCN97 (ACC/SCN 1997) and MI98 (MI 1998) report a national survey with a prevalence estimate of 0.13 of preschoolers with serum retinol levels &lt; 20 ug/dl. MDIS95 (WHO 1995) used older data (1988 with a prevalence estimate of 0.22). The prevalence of 0.13 was chosen. Some further regional updates were provided by Segura at the Guatemala City IVACG meeting (Segura 1996), but although these rates are higher, they appear to be in general agreement with what one would expect see across the entire country.</li> <li>3. 1999 PAHO (12 to 59 month olds) (PAHO and PAHO-HPN-DHPP 2001), 1999 (UNICEF 2001)</li> </ol>
	<b>Saint Kitts and Nevis</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Saint Lucia</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Saint Vincent and the Grenadines</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Suriname</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Trinidad and Tobago</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>United States of America</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Uruguay</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. No data available.</li> <li>3. No data available.</li> </ol>
	<b>Venezuela, Bolivarian Republic of</b>	<ol style="list-style-type: none"> <li>1. No data available.</li> <li>2. A 1994 national survey reported by ACCSCN97 (1998) indicated a prevalence = 0.07, though Rodriguez (Rodriguez 1996) found a prevalence = 0.165 of preschool children with serum retinol levels &lt; 20 ug/dl. Rodriguez conducted a large sub national survey. The former national survey estimate of 0.07 was chosen.</li> <li>3. 1999 PAHO (12 to 24 month olds) (PAHO and PAHO-HPN-DHPP 2001)</li> </ol>

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WHO Region	Europe	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Albania	1. No data available. 2. No data available. 3. No data available.
	Andorra	1. No data available. 2. No data available. 3. No data available.
	Armenia	1. No data available. 2. No data available. 3. No data available.
	Austria	1. No data available. 2. No data available. 3. No data available.
	Azerbaijan	1. No data available. 2. No data available. 3. No data available.
	Belarus	1. No data available. 2. No data available. 3. No data available.
	Belgium	1. No data available. 2. No data available. 3. No data available.
	Bosnia and Herzegovina	1. No data available. 2. No data available. 3. No data available.
	Bulgaria	1. No data available. 2. No data available. 3. No data available.
	Croatia	1. No data available. 2. No data available. 3. No data available.
	Czech Republic	1. No data available. 2. No data available. 3. No data available.
	Denmark	1. No data available. 2. No data available. 3. No data available.
	Estonia	1. No data available. 2. No data available. 3. No data available.
	Finland	1. No data available. 2. No data available. 3. No data available.
	France	1. No data available. 2. No data available. 3. No data available.
	Georgia	1. No data available. 2. No data available. 3. No data available.
	Germany	1. No data available. 2. No data available. 3. No data available.
	Greece	1. No data available. 2. No data available. 3. No data available.

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WHO Region	Europe	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Hungary	1. No data available. 2. No data available. 3. No data available.
	Iceland	1. No data available. 2. No data available. 3. No data available.
	Ireland	1. No data available. 2. No data available. 3. No data available.
	Israel	1. No data available. 2. No data available. 3. No data available.
	Italy	1. No data available. 2. No data available. 3. No data available.
	Kazakhstan	1. No data available. 2. No data available. 3. No data available.
	Kyrgyzstan	1. No data available. 2. No data available. 3. No data available.
	Latvia	1. No data available. 2. No data available. 3. No data available.
	Lithuania	1. No data available. 2. No data available. 3. No data available.
	Luxembourg	1. No data available. 2. No data available. 3. No data available.
	Malta	1. No data available. 2. No data available. 3. No data available.
	Monaco	1. No data available. 2. No data available. 3. No data available.
	Netherlands	1. No data available. 2. No data available. 3. No data available.
	Norway	1. No data available. 2. No data available. 3. No data available.
	Poland	1. No data available. 2. No data available. 3. No data available.
	Portugal	1. No data available. 2. No data available. 3. No data available.
	Republic of Moldova	1. No data available. 2. No data available. 3. No data available.
	Romania	1. No data available. 2. No data available. 3. No data available.



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WHO Region	Europe	
	Country Name	Comments: 1. National Weight; 2. Measured Prevalence; and 3. VA Program Coverage Weight
	Russian Federation	1. No data available. 2. No data available. 3. No data available.
	San Marino	1. No data available. 2. No data available. 3. No data available.
	Slovakia	1. No data available. 2. No data available. 3. No data available.
	Slovenia	1. No data available. 2. No data available. 3. No data available.
	Spain	1. No data available. 2. No data available. 3. No data available.
	Sweden	1. No data available. 2. No data available. 3. No data available.
	Switzerland	1. No data available. 2. No data available. 3. No data available.
	Tajikistan	1. No data available. 2. No data available. 3. No data available.
	The former Yugoslav Republic of Macedonia	1. No data available. 2. A 1998 national survey reported by MDIS2001 (WHO 2001) concerning children 0 to 4 years of age found a prevalence = 0.295 of children with serum retinol levels < 20 ug/dl. This may not be representative of the region, but rather an isolated example of the extended nutritional consequences of conflict on the population. Therefore, no further extrapolations have been done for European region, but the figures for Macedonia are included. 3. No data available.
	Turkey	1. No data available. 2. No data available. 3. No data available.
	Turkmenistan	1. No data available. 2. No data available. 3. No data available.
	Ukraine	1. No data available. 2. No data available. 3. No data available.
	United Kingdom	1. No data available. 2. This is not included in any regional or global estimates. 3. No data available.
	Uzbekistan	1. No data available. 2. No data available. 3. No data available.
	Yugoslavia	1. No data available. 2. No data available. 3. No data available.

**Column Heading Footnotes:**

Country Name.	Country names as listed by WHO, based on the World Health Report 2001, List of Member States by WHO Region and Mortality Stratum, page 168 (WHO 2001).
Comments.	No Note Available
References	See the references in Section 8.