

## Costing Model for the Arab Region

### (a) Purpose of the costing model

The appropriate costing model to establish the economic/monetary costs of domestic violence is shaped by several factors. These include knowledge of the policy environment and legislative framework addressing violence against women. The Status of Arab Women report<sup>1</sup> indicates a narrow understanding across the region of the types of behaviours that constitute violence, which is focused on physical violence and/or psychological abuse experienced in the family, and to some extent, sexual violence experienced in the community. Prevalence data on these experiences are limited, with only about one third of countries implementing the Demographic and Health Surveys module on domestic violence at least once (Egypt, Jordan, Morocco, Sudan, Tunisia and Yemen). Violence against women in the public space or within institutions, such as educational or business, is fragmentary.

Another factor is the depth of the legal and policy environment to provide services that respond to, treat, and prevent violence. While most countries have procedures for police to respond to reported violence, reporting by women is low.<sup>2</sup> A further point of entry is the health sector, as a significant proportion of women experiencing physical or sexual violence are injured. However, identifying them is difficult, as violence is often not reported and health professionals do not routinely explore whether violence is an underlying factor. Hence, the lack of legislative and policy frameworks limits the extent of services available to survivors.<sup>3</sup>

In the absence of specific data, other studies may provide cost estimates of legal support (police, courts, legal aid institutions), medical services (treating injuries, counselling, therapeutic recovery) or social services (temporary and long-term refuge/housing, vocational training, livelihoods programmes). The availability of such data would determine whether an accounting or econometric approaches was applicable.<sup>4</sup>

Overall, the information base in the Arab region on violence against women and girls, particularly marital violence and its consequences, is fragmented and unreliable. Given the gaps in information, robust estimation of economic costs requires that primary data be collected from individual women and services. To estimate costs of providing services, the accounting methodology or econometric approaches would be useful. Rudimentary service provision means that gender-responsive budgeting is unlikely to yield reliable estimates of direct tangible costs.

A minimal response would render the process meaningless, as it would result in a gross underestimate of the resources required to fully address the needs of women experiencing violence. It might be better, therefore, to present the cost as the current level of investment in services.

The United Nations Economic and Social Commission for Western Asia and UN Women developed the below framework of a potential cost estimate.

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<sup>1</sup> ESCWA and UN Women, “Status of Arab women report: violence against women – what is at stake” (E/ESCWA/ECW/2017/2).

<sup>2</sup> Ibid

<sup>3</sup> Ibid., chapters 2 and 3.

<sup>4</sup> Nata Duvvury and others (2013), *op. cit.*

### Framework of potential cost estimates

| <i>Data</i>   | <i>Methodology</i>                                       | <i>Cost</i>  |
|---|--|--|
| Utilization data at regional/national level, budget allocations for services<br>Unit costs of services from secondary sources | Accounting<br>Econometric                                | Direct cost of service provision   |
| Survey on violence: prevalence, injury, health-related outcomes<br>Secondary data on injury impacts on work and earnings      | Econometric<br>PSM                                       | Productivity impact<br>Foregone earnings<br>Health costs   |
| Dedicated costing survey: prevalence, incidents, expenditures, missed work, earnings, etc.                                    | Accounting<br>Econometric<br>PSM<br>DALYs                | Out-of-pocket expenditures<br>Lost income due to missed work<br>Productivity impact<br>Foregone earnings<br>Impact on school performance<br>Tax revenue lost<br>Administrative costs |
| Longitudinal data: impacts on children, long-term impact of disability on work and productivity                               | Econometric<br>PSM<br>DALYs<br>Willingness to pay/accept | Intergeneration impact on children: cost of juvenile crime, human capital of children<br>Pain, suffering and lost quality of life  |

#### (b) Specific cost estimates

The types of costs at each level of analysis (individual/household, community/third party, and government) that could be estimated are presented **below**:

#### Costs and data requirements by level of analysis

|                                   | <i>Cost category</i> | <i>Type of costs</i>  | <i>Data requirements</i>  |
|-----------------------------------|----------------------|---|---|
| <b>Individual/household costs</b> |                      |   |   |
|                                   | Out-of-pocket costs  |   | Actual expenditure on transportation, materials, and all fees paid for each service per each incident of violence |
|                                   | Medical              | Emergency room care<br>Hospitalization<br>Outpatient visits<br>Nursing home care<br>Dental care<br>Mental health care<br>Medication<br>Transportation<br>Ambulance<br>Surgery |   |
|                                   | Criminal justice     | Incarceration<br>Court appearances  |   |

|  | <i>Cost category</i>                  | <i>Type of costs</i>   | <i>Data requirements</i>  |
|--|---------------------------------------|--|---|
|  |                                       | Emergency protection order<br>Temporary restraining order<br>Probation<br>Lawyers' fees<br>Transportation<br>Communication charges   |   |
|  | Housing and refuge                    | Hotel<br>Transition homes<br>Shelters<br>Rental housing  |   |
|  | Legal services                        | Mediation (informal/formal)<br>Divorce<br>Legal counsel  |   |
|  | Social services                       | Counselling<br>Rehabilitation  |   |
|  | Replacement of property               | Property repaired<br>Property replaced   | Actual expenditure for property replaced for each incident of violence  |
|  | Impact on children                    | Missed schooling   | Number of missed schooldays for each incident<br>Annual school fees paid<br>Annual number of schooldays   |
|  | Foregone Income                       |  |   |
|  | Reduced earned income                 | Lost days of paid work immediately following incident (for survivor, perpetrator, other adults)<br>Lost days of paid work to access services (for victim, perpetrator, other adults) | Number of days (paid and unpaid) lost per each incident by woman, husband, family members<br>Number of days lost in accessing services per each incident (woman, husband, other family members)<br>Weighted average wage rate for women and men |
|  | Loss of unpaid care and domestic work | Lost days of unpaid care and domestic work immediately following incident for survivors<br>Lost days of domestic work due to accessing services (for victim, other women)            | Number of lost days of household work by woman per each incident<br>Number of lost days in order to access services<br>Imputed market wage  |
|  | Loss of productivity                  | Reduced output per reduced labour input (for woman, husband, other adults) in household enterprises  | Reduced output per labour input for woman, husband, other adults in household enterprises<br>Number of times an individual comes late/leaves early, lacks focus and duration of time  |

|                              | <i>Cost category</i>       | <i>Type of costs</i>   | <i>Data requirements</i>  |
|------------------------------|----------------------------|--|---|
|                              |                            |  | Number of times accidents occur and time duration for inability to work   |
| <b>Community/third party</b> |                            |  |   |
|                              | Cost of providing services |  | Operating budgets of each service<br>Proportion of total cost due to domestic violence<br>Average unit cost based on human resource cost each service (time, salary, training, etc.) and capital costs for each service<br>Proportion of women utilizing the service<br>Median number of days service is accessed |
|                              | Medical costs              | Emergency room care<br>Hospitalization<br>Outpatient visits<br>Nursing home care<br>Dental care<br>Mental health care<br>Medication<br>Transportation<br>Surgery |   |
|                              | Criminal justice           | Incarceration<br>Prosecutors<br>Emergency protection order<br>Temporary restraining order<br>Probation<br>Counselling<br>Rehabilitation                          |   |
|                              | Housing and refuge         | Transition homes<br>Homeless shelters<br>Hotel vouchers  |   |
|                              | Legal services             | Mediation<br>Divorce<br>Legal counsel<br>Emergency protection orders   |   |
|                              | Social services            | Counselling<br>Rehabilitation<br>Vocational training programmes<br>Livelihood programmes<br>Subsidies for education<br>Welfare programmes                        |   |

|                              | <i>Cost category</i>   | <i>Type of costs</i>  | <i>Data requirements</i>   |
|------------------------------|--|---|--|
| <b>Business</b>              |  |   |  |
|                              | Output loss  | Reduced output<br><br>Productivity loss (presenteeism)<br>Measure of presenteeism that captures lack of concentration/focus, arriving late, leaving early and accidents | Missed workdays by victim, perpetrator, other adults involved in supporting victim<br>Average output/worker/day<br><br>Number of days lacking focus, arriving late, leaving early, etc.<br>Average time in minutes and hours affected<br>Number of employees impacted<br>Number of accidents and number of days affected |
|                              | Expenditures on direct service provision                         | Counselling services<br>Legal aid<br>Skills training<br>Advocacy campaigns  | Actual expenditure for programmes  |
|                              | Expenditure for firing, hiring and retraining staff              | Firing costs<br>Hiring costs<br>Retraining costs  | Expenditure involved in firing multiplied by number of individuals<br>Costs of hiring new staff<br>Training workshops costs  |
| <b>Government / National</b> |  |   |  |
|                              | Macro opportunity costs  | Aggregate out-of-pocket costs<br>Monetary value of total workdays lost<br>Monetary value of total care workdays lost<br>Output loss for businesses                      | Unit expenditure by woman/household/incident<br>Workdays lost (paid and unpaid)<br>Prevalence rate<br>Incident rate (number of incidents per victim)<br>Lost output per business/sector  |
|                              | Productivity loss  | Earnings differential for women experiencing violence<br>Reduced labour force participation<br>Intergenerational loss in human capital                                  | Yearly earnings of all women<br>Labour force participation<br>Educational performance of children from households with violence  |
|                              | Aggregate cost of service provision and other welfare programmes | Aggregate expenditure on services<br>Aggregate welfare programmes to violence survivors<br>Expenditure by businesses for violence-related programmes                    | Unit cost across sectors<br>Unit cost of prevent programmes<br>Unit cost of welfare/transfer programmes<br>Prevalence rate<br>Utilization rate<br>Incident rate  |

### (c) Economic Cost Model for The Arab Region

The costs of domestic violence can be summarized in a model for all direct and indirect tangible (hereafter referred to as financial) costs of marital violence as:

$$FCMV = THC + TCSP + TBC(1)$$

Where FCMV is the financial costs of marital violence, THC is total household cost, TCSP represents community-level costs of service provision, and TBC is the total cost to businesses.

In this simplistic model, there is the risk of double counting, as a household cost is also a business cost, and household expenditure for services may also be counted in the cost of service provision. It is useful to think of the three elements of total cost as entry points for starting cost estimation. Data availability will determine how complete the cost estimation at household, community and business level.

Elements of total cost are presented in equation 1 as equal, another simplistic assumption. The relative weight of household, service provision and business costs may vary depending on the structure of the economy, the degree of market penetration, the culture of help-seeking by survivors, and the depth of response by government and community.

#### Household cost model

Within the household, primary costs to be considered are out-of-pocket expenses, reduced income, loss of household work and lost productivity. This can be written as:

$$THC = \sum_{i=1}^n HCi(2)$$

For each household, the cost equation is:

$$HC = \sum_i \sum_j p s_{ij} + \sum_i \sum_j OPC_{ij} + \sum_i \sum_j w L_{ij} + \sum_i \sum_j w_j^* L_j^* + \sum_i \sum_j w_i \left[ \left( \frac{h_{ij}}{N} \right) L_{ij} \right] + \sum_j w_i^* \left[ \left( \frac{k_j}{A} \right) L_{ij} \right] + \sum_i \sum_j \left( \frac{MD_{ij}}{TD} \right) SF(3)$$

Where  $p s_i$  is the fee for service  $i$  paid by the individual woman after  $j$  incident,  $OPC_i$  is the out-of-pocket payments (for transport, communication, etc.) for accessing each service after incident  $j$  as well any expense for property replacement paid by the  $i^{\text{th}}$  woman,  $L_i$  is the number of days of formal and informal employment lost for household member  $i$  per incident  $j$ ,  $w_i$  is the actual wage rate for household member  $i$ ,

$L_{ij}^*$  is the number of days of household work lost by the household member  $i$  for each incident  $j$ ,  $w_i^*$  is the imputed wage for household work,  $h_{ij}$  is the number of hours actually worked after each incident  $j$  for each household member  $i$ ,  $N$  is total number of hours in a working day,  $k_j$  is the number of hours of household work actually worked after each incident  $j$ ,  $A$  is the total number of hours required for household work,  $MD_{ij}$  is the number of missed schooldays for each incident  $j$  for each child  $i$ ,  $TD$  is the total number of schooldays in the year, and  $SF$  is the total amount of school fees paid for the year.

The first two terms represent the out-of-pocket expenses for the individual woman/household in accessing service  $i$ . The third term represents the days lost of paid and unpaid work for the  $i^{\text{th}}$  individual for the  $j^{\text{th}}$  incident. For unpaid work, the wage will be the imputed market wage. The fourth term represents the loss in days of housework and is valued at the imputed wage of those services in the economy (for example, cooks, laundresses). The fifth term represents the productivity lost, with  $h_{ij}$  representing the numbers of hours spent by the  $i^{\text{th}}$  woman in paid and unpaid work after the  $j^{\text{th}}$  incident divided by the total number of working hours in a day multiplied by the annual number of working days. This would be repeated for all other affected household members. The sixth term represents the value of the loss of household work, with  $k_j$  representing the number of hours spent on housework by a woman after the  $j^{\text{th}}$  incident, divided by the number of hours

usually spent on household chores multiplied by the number of days of work lost by the  $i^{\text{th}}$  woman immediately after the  $j^{\text{th}}$  incident, multiplied by the imputed wage rate,  $w \cdot i$ . The final term represents the loss to household when children miss school.  $MD_{ij}$  is the number of schooldays missed for each incident.  $TD$  is total schooldays, and  $SF$ , total school fees paid.

#### Community service cost model

As noted earlier, the total cost of service provision at community level is the summation of costs across all services:

$$TCSP = \sum_{i=1}^n CSP_i - \sum_{i=1}^n ps_i(4)$$

Where  $CSP_i$  is the cost of service provision for service  $i$  given below, and  $ps_i$  is the fees paid by individual women to the services.

For each service, the cost of provision can be formalized as:

$$CSP = \sum_n \left\{ \frac{wL+rK+p*RM}{c} \right\} * MV_i * u_t(5)$$

Where the numerator is the operating budget for a service, including the salary cost (with  $w$  as wage and  $L$  as number of staff) and material cost, such as supplies, training materials ( $p$  is the price and  $RM$  is the amount of material), and  $rK$  is the infrastructure and equipment cost. The denominator is the total number of clients serviced, the ratio represents the unit cost,  $MV_i$  represents the number of survivors of marital violence using the service and  $u_t$  the number of times a service is utilized.

#### Business cost model

The total cost to businesses can be expressed as:

$$TBC = \sum_{i=1}^n BCI(6)$$

The cost to each business can be formalized as:

$$C = \{ \sum_i w_i [L_i - \sum_j (q_{ij}|N)L_{ij}] \} + (wL + rK + p * RM)(7)$$

Where  $q_{ij}$  is the number of hours worked by the  $i^{\text{th}}$  woman after the  $j^{\text{th}}$  incident and  $N$  is the total number of hours of work multiplied by the number of days the  $i^{\text{th}}$  woman had lost after the  $j^{\text{th}}$  incident. Note that this has been subtracted from  $i^{\text{th}}$  woman normal man days ( $L_i$ ) and thus represents output loss for the firm. The second term is the total expenditure incurred by the business for providing support services to survivors of violence.

#### National costs

To estimate the aggregate opportunity cost of marital violence by an intimate partner, the following equation can be used:

$$TOPPC = (\sum_{i(s=1)}^{\uparrow} n [(TFP * PV * IR * AVOPC) + \sum (TFP * PV * IR * COWDL) + CODL])(8)$$

Where TOPPC is total opportunity cost, TFP is total female population, PV is current prevalence rate of intimate partner violence for women,<sup>5</sup> IR is incidence rate or number of separate episodes/incidents per 100 women, AVOPC is average out-of-pocket expenditure incurred per incident for each service, s is each individual service (health, police, court, informal authorities, shelter), COWDL is cost of workdays lost (paid, unpaid and reproductive work) per incident, and CODL is cost of schooldays missed per incident.

Productivity loss can be estimated using econometric methods, including two-step ordinary least squares (OLS) regression, a standard econometric technique, on earnings. First, an instrumental variable for violence is identified (related to violence but with no correlation to earnings). For this, a logistic regression is done to identify potential variables closely linked to violence. The standard variables are a woman's and partner's education, wealth or socioeconomic status, age, witnessing violence or experiencing violence in childhood, partner's drinking/gambling, gender attitudes and frequency of quarrels. Significant variables for violence are tested against earnings to assess a robust instrument variable for violence. A standard OLS regression equation for earnings based on the standard Mincer equation, including variables such as site (rural/urban), wealth, education, years of employment, occupation, age and instrument variable, can then be tested.<sup>6</sup>

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<sup>5</sup> The age range for prevalence can vary depending on source of data. If DHS or WHO studies are used, then the age range is 15-49. But if a dedicated survey is used, the age range can be as broad as 18-60 or 18-64, depending on the working life of women in specific countries.

<sup>6</sup> Andrew Morrison and Maria Beatriz Orlando, "The costs and impacts of gender-based violence in developing countries: methodological considerations and new evidence", Working Paper (Washington, D.C., World Bank, 2004).